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PUBLICATION NO.1, OF THE NATIONAL LAND USE PLANNING COMMITTEE AND THE NATIONAL ADVISORY AND LEGISLATIVE COMMITTEE ON LAND USE

RESOLUTION WITH REFERENCE TO THE RELATIONSHIP OF URBAN UNEMPLOYMENT TO LAND UTILIZATION AND SETTLEMENT

(Formulated by the National Land-Use Planning Committee and adopted by the National Advisory and Legislative Committee on Land Use, May 3, 1932; revised and made public June 23, 1932)

The National Land-Use Planning Committee has had brought to its attention the widespread tendency for the unemployed to look to the land as a means of remedying their condition and the activity of numerous agencies, philanthropic and semi-philanthropic and commercial, in developing plans for placing unemployed families on the land.

The Committee recognizes that the volume and methods of land settlement are related in an important way to the purposes for which it was created. The National Land Utilization Conference held in Chicago largely grew out of the recognition of the existence of surplus agricultural production, the cultivation of lands that are not adapted to profitable agricultural production, and the heavy cost to the public growing out of the planless distribution of pupulation in sparsely settled areas.

If unemployment is to be long continued, it may give rise to a number of serious problems in land utilization. At the present moment, however, the Committee feels that the time is not yet ripe to determine whether unemployment will continue to a sufficient extent to require a consideration of its long-time relationship to a program of land utilization. However, the Committee recognizes that an active movement is under way and that there is need for a public policy to guide and direct the movement and to prevent the adoption of unwise types of land settlement.

After considering the problem in a preliminary way, the Committee referred the subject to its Technical Committee on Land Settlement, composed of about thirty individuals in Washington and throughout the country who are in a position to be familiar with the problems of agricultural settlement. On the basis of the report of its Technical Committee, the National Land-Use Planning Committee has formulated the following statement of principles and recommendations to the National Advisory and Legislative Committee on Land Use;

1. There is great danger that the acute consciousness of the magnitude of the present problem of unemployment may result in a misunderstanding of the character of the opportunities available in the country-side for giving employment to large numbers of families and supplying them with subsistence. City folk, unfamiliar with agricultural conditions, are prone to develop exaggerated ideas as to the quantity of land suitable for cultivation, the ease with which a living can be obtained in the country, and the extent to which the unemployment problem can be solved by a back-to-the-land movement. It seems important, therefore, that emphasis be placed on the following broad conclusions with reference to these opportunities:

1. Some of those who have become unemployed are persons who had retained some connection with the coutry, either because they had recently moved from the farm, or through relatives living in the country. A good many of this class have already returned to the farm and others, by reason of their connections in the country, will be able to make the shift without public assistance. Under present conditions this represents a normal movement which need not excite concern. In numerous cases, young people are returning to the home farm, others unemployed are making arrangements to live with country relatives, and retired farmers are returning to the farms they left.

2. The available supply of improved farms adapted to commercial production

of general crops and livestock does not hold out promise of extensive opportunity for the unemployed to improve their condition in this way. While a good many of the farms normally adapted to agricultural production have gone into the hands of creditor agencies, our information indicates that an extensive demand for renting farms has absorbed a large proportion of the better types of farms held by creditor agencies. It is true that numerous farms suitable for commercial production are for sale at prices which seem low compared with those which prevailed several years ago. However, it is certain that the great majority of the unemployed do not have sufficient capital to purchase a farm or even to operate a commercial farm on a rental basis, and the possibility of their having a return above subsistence is extremely doubtful under present economic conditions.

For those who contemplate occupancy of farms for the production of crops and livestock, either commercially or on a subsistence basis, it is generally advisable to start as a farm laborer, by securing the use of land through rental contract on an annual basis, or by a combination of the two methods, and thus give themselves time to become better acquainted with the farm or with other possible farms and with real estate values, and to determine by experience whether they will care to continue permanently in the locality, or in farming as an occupation. In the last year or two, land values have been steadily declining. Whether this decline will continue further, or has reached bottom, can not yet be determined. Before purchasing, therefore, it will usually be wise to make a careful comparison of potential receipts and expenses, in order to determine whether the probable net income will justifly the purchase price. Prices of things farmers buy are still relatively high as compared with prices which they obtain for their products.

3. There is also a considerable misapprehension as to the possibility of creating new farms for commercial production.

(a) One serious type of misunderstanding is that the large area of unreserved public domain still open to homestead entry is suitable for development of arable farms. Such lands are adapted for range for cattle and sheep at the rate of from 20 to 50 acres per head of cattle, but in general contain little or no land capable of cultivation. The largest unit that can be acquired under the Homestead Acts, namely, 640 acres, is far too small to permit the making of an adequate livelihood for a family by grazing stock. Since the land is already in use by western livestock men for range purposes, to grant larger homestead units would mean displacing those already using the land. On some of the Federal reclamation projects there are still lands to be had by homesteading. In general, however, it is necessary to assume a considerable capital investment for construction charges, besides ditching and leveling the land and constructing buildings, not to speak of the capital required for the necessary livestock and equipment. For these reasons, the policy of the Bureau of Reclamation is to require at least $2,000 capital and two years' farming experience. The fact, moreover, that a good many units of this kind remain to be homesteaded means in most cases that the more desirable tracts in these reclamation projects have already been occupied.

(b) Another misapprehension is that the large areas of undeveloped land in cut-over areas or in swamp and other areas needing reclamation are capable of being developed into profitable commercial farms. In general, these are lands which have remained after the more suitable opportunities for the development of farms were selected, even when economic conditions for profitable agricultural production were much more favorable. These lands are characterized by serious disadvantages in soil and climate, as well as handicapped - - - - - - -

by low commodity prices, or must be reclaimed in order to make them available for cultivation. Extensive areas that were reclaimed when prices for farm products were higher are now abandoned or have become tax delinquent or passed into foreclosure.

The idea is widely entertained that such undeveloped lands can be profitably developed and settled in compact colonies as a means of providing for the unemployed. Such programs are open to question on a number of grounds.

(1) They assume a degree of permanence in an emergency that may prove only temporary.

(2) The record of the experiments in the attempt to form these colonies in this country is not a happy one.

(3) A great deal of capital is required on the part of the colonizing agency, which implies a profitable commercial agriculture on the part of the settlers, if a return on capital advanced is to be made.

(4) A considerable period usually would elapse before such farms could be developed and put on a productive basis.

(5) The above facts would greatly restrict the number of unemployed that could be provided for with the amount of capital and administrative resources available under any given program of relief.

4. As the opportunities for the extensive settlement of the unemployed in commercial farming are not very extensive nor promising, we have concluded that in so far as they are to look to the land for relief, such relief must take the form mainly of subsistence cultivation. This implies either doing without necessities and luxuries other than food or shelter or fuel or one or more of these in combination, or obtaining these other advantages by part-time industrial work or other sources of income. It is safe to say that the

majority of unemployed families will not find it possible to go for a long period of time on what they can produce for family consumption, without some money income. The major outlets for the unemployed principally on a subsistence basis of cultivation are as follows:

(a) Abandoned farms, unoccupied summer shacks and summer residences that may be readily obtained either free of charge or for only a small outlay. It is probable that a systematic effort to discover such opportunities would reveal a considerable number. In most cases, however, farms have been abandoned because they are undesirable economically or socially and such usually offer little more than bare shelter and food and possibly fuel. In many cases, urban families will find it necessary to encounter hardships to which they are not accustomed.

(b) Opportunities for establishing homes near cities with the expectation of part-time or full-time employment in industry. This movement has been under way for a number of decades, and is probably a normal tendency, which is promoted by the moving of industries from large cities to smaller cities or rural areas. But this tendency does not promise immediate relief for unemployment, except for those who have some capital and who can look forward to part-time urban employment.

(c) It is frequently proposed that relief agencies acquire by purchase or otherwise suitable areas of cultivable land in the general vicinity of large cities where temporary shelters can be established either for warm-season residence or all-year residence and to which families may be moved and aided in providing their own subsistence. While this proposal does not involve an important land utilization problem, we recognize that its advantages and disadvantages as a relief measure should be carefully weighed as compared with other methods of relief. It involves a

considerable outlay of capital by relief agencies to stimulate food production, which might helpfully be employed immediately, as for instance, in saving through processing and storing large quantities of food products which will otherwise be wasted; thus avoiding the glutting of the markets for perishables.

(d) Cities and industrial establishments may provide garden plots on vacant lots or accessible suburban areas where people who continue to reside in the cities may raise emergency gardens. This movement is already well under way in a good many cities, and under proper conditions appears to be a desirable type of relief project.

(e) It is possible that for a limited number of unemployed individuals or families, opportunities may be found in farm families to work on existing farms. This, however, would have to be mainly for subsistence, for the existing supply of farm labor at commercial wages is more than adequate. The placing of unemployed in such families would have to be done cautiously to avoid further dislocation of the farm labor market.

II. The Planning Committee recommends to the Advisory and Legislative Committee on Land Use as follows:

1. That the latter Committee take proper steps to give wide publicity to the above facts and principles as a means of preventing the numerous mistakes that may develop through a misapprehension of the possibilities of relieving unemployed through land settlement.

2. That steps be taken to provide adequate guidance, direction, and protection to the back-to-the-land movement, either as individuals or by organized means. It is also important, especially from the standpoint of the purposes of the two land utilization committees, that this movement not

be permitted to operate to the serious disadvantage of our rural life and in such manner as to increase the existing maladjustments in the utilization of land. The unwise development of commercial productions, particularly of truck products, which have a comparatively narrow market, may operate not only to injure the unemployed themselves, but also to create serious distress among the producers of farm products. It is also important to take proper steps to prevent rural communities already handicapped by financial difficulties from being unduly burdened with a large number of dependent individuals who have been encouraged to move out to the open country as a means of relieving cities from this burden.

3. As a means of furthering these ends, the Planning Committee recommends that the Advisory and Legislative Committee take steps to provide for the establishment of the necessary Federal and State machinery to give adequate direction to this back-to-the-land movement. We do not recommend a large appropriation for the purpose of financing the movement itself, but we consider it desirable to establish in each State where the problem is serious a central State committee composed of individuals representing both urban and rural interests to give proper direction to this movement. Such committees will normally consist of persons serving either ex-officio or without salary, with the necessary full-time personnel. The principal function of such State committees would be to coordinate the efforts of existing local agencies both in city and rural territory in finding the most promising opportunities of the various types, means for the settlement of unemployed on the land, and in selecting those individuals among the unemployed best fitted to adjust themselves to these various opportunities. Such committees could also aid in discouraging ill-advised or exploitative projects.

We also recommend the provision for a limited Federal personnel to serve in stimulating the formation of these State committees and unifying, and coordinating their aims. In order to simplify this Federal machinery, we recommend that a small unit be provided for in the Department of Agriculture to develop the above described program. While the interests involved are not entirely agricultural, it appears there would be greater unity of objectives and efficiency in operation by a single department undertaking this function, with such cooperation with other departments as may appear needful.

(Note: The above recommendations, formulated by the National Land-Use Planning Committee, were considered by the Advisory and Legislative Committee on Land Use at its meeting on May 2-3, 1932. The recommendations were adopted in principle and it was agreed to give them general distribution. The Committee also took steps to have the essential principles of the above recommendations embodied in a Senate joint resolution (No. 154), which was introduced by Senator McNary and referred to the Committee on Agriculture and Forestry. Since then S.J.R. No. 154 has been modified and reported as S.J.R. No. 169.)

The secretary of the National Land-Use Planning Committee is Dr. L. C. Gray, Bureau of Agricultural Economics, U. S. Department of Agriculture, Washington, D. C.

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TIONAL LAND USE PLANNING COMMITTEE AND
ATIONAL ADVISORY AND LEGISLATIVE COMMITTEE
ON LAND USE
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October 1, 1932.

ORGANIZATION AND OBJECTIVES OF THE NATIONAL LAND-USE PLANNING COMMITTEE AND THE NATIONAL ADVISORY AND LEGISLATIVE COMMITTEE ON LAND USE

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Introduction

Various inquiries are received from time to time relative to the organization and activities of the National Land-Use Planning Committee and the National Advisory and Legislative Committee on Land Use. It has appeared desirable to prepare a brief statement that will make available authentic information on the purpose for which the committees were established, the scope of the field which they have undertaken to cover, and the character of the problems and policies which they have under consideration.

Origin of the Committees

In the Fall of 1931, the Secretary of Agriculture, Honorable Arthur M. Hyde, in conjunction with the Association of Land Grant Colleges and Universities, issued a call for a national conference on land utilization, which was held in Chicago, November 19 - 21, 1931. About 300 persons widely representative of the various organizations interested in land and rural problems, were in attendance. The program included nearly two-score papers by experts on various phases of the land problem. A distinguished and competent committee on resolutions presented some eighteen resolutions, which were adopted as the expression of the majority conclusions of the conference. (These papers and resolutions are published in Proceedings of the National Conference on Land Utilization, published by the United States Department of Agriculture.)

Resolution No. 18 of the Chicago Conference provided for the establishment of two national committees charged with the duty of working out the details of a national program of land utilization. It was provided that the membership of the National Land-Use Planning Committee should consist of a designated number of representatives from each of the several departments of the Federal Government that are concerned with land economics, together with five representatives of the Association of Land Grant Colleges and Universities chosen from the various sections of the country. The membership of the National Advisory and Legislative Committee on Land Use was specified in terms of a designated number of representatives from each of twelve nongovernmental national organizations interested in land utilization and agricultural policies.

In accordance with a resolution of the Chicago Conference, the Secretary of Agriculture was requested to invite the various designated agencies to select their representatives. The Secretary himself selected

as members of the Land-Use Planning Committee the chiefs of the five bureaus of the Department of Agriculture which had been specified by the Chicago Conference. The other Federal Departments and outside agencies duly appointed their representatives. The Secretary of Agriculture was also charged with the duty of issuing the call for the initial meeting of the two committees, which was held in February, 1932. Since that time and prior to the publication of the present statement (October 1, 1932), the Advisory and Legislative Committee has held one meeting and the Land-Use Planning Committee two meetings.

The National Advisory and Legislative Committee on Land Use was authorized to add to its own membership, and since its initial organization has provided for a representative from the American Society of Agricultural Engineers. The Land-Use Planning Committee, however, was given no authority to change its membership. (A list of the officers and members of the committees is attached to this statement.)

Functions and Relationship of the Land-Use Committees

No recommendations were made by the Chicago Conference as to the respective functions of the two committees. A natural division of function, however, is indicated by their names and the character of their membership. The National Land-Use Planning Committee, being composed largely of governmental and university administrators, is competent to deal with the technological questions of land use planning. The Advisory and Legislative Committee is qualified to interpret and arouse public opinion and to determine what procedures are practicable in bringing about desirable changes.

In the definition of these objectives and the determination of the policies best adapted to fulfill them, both committees can make a contribution - the Land-Use Planning Committee through extensive knowledge of conditions, administrative possibilities, and research problems; the Advisory and Legislative Committee through its familiarity with the currents of public opinion and the course of legislation.

The Field of the Committees

Broadly defined, land utilization is the science and art of achieving the most effective use of land. In the formulation of a national land utilization program effective use must be consistent with public welfare. In large measure this may be consistent also with private advantage, but where the two interests conflict the public interest must be paramount so far as consistent with safeguarding the constitutional rights of the individual.

The concept of efficient utilization includes the concept of conservation of natural resources. The emphasis in land utilization is on the mode of use and the essential adjustments involved; but the conservation of soil fertility, timber, water, wild life, recreational, and scenic resources is a basic consideration in the determination of effective present use.

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In the long run the determination of most effective use becomes a matter of regional or local planning which will take account of important public considerations and necessary adjustments. Such planning, however, implies a preliminary clarification of public objectives and a formulation of policies.

This point may be made clear by a few illustrations. For example, before effective local land use planning can be carried out it is important that we have a clear conception of our policies with respect to public acquisition of land. For what purposes should land be acquired, and what should be the respective spheres of Federal, State, and county governments? These questions are intimately associated with tax policies. At present millions of acres are so heavily burdened with taxes that private individuals and concerns cannot continue to hold them. The States face the issue either of reducing the tax burden materially or accepting the responsibility of taking over into public ownership millions of acres through tax delinquency. This is by no means a simple issue. The answer will vary in some degree with type of land, its adaptability to public administration, and the possibility of sound methods of land use by private enterprise even if the tax burden should be materially reduced.

These illustrations emphasize the reasons why the National Land-Use Planning Committee has considered the definition and clarification of objectives and policies are essential before proceeding with the detailed local planning implied by its name.

Land use planning, however, is an essential objective of the Land Use Planning Committee. This does not imply an attempt to develop a cut and dried program for the indefinite future, but rather, to bring about such adjustments in land use and in the conditions affecting, or affected by, land use as appear to be in the interest of general welfare. The Committee proposes for the present to concentrate its emphasis on areas, where economic maladjustments as reflected in extensive delinquency, foreclosure, or farm abandonment appear most serious. The committee as such has no budget of its own. In carrying out its function of land use planning, therefore, it is undertaking to enlist the cooperation of the various investigational and administrative agencies, State and Federal which can contribute to a program and to encourage the coordination of their efforts. Such a program has already been undertaken in two States.

To enable it to bring to bear on the various problems the best available technical judgment and experience, the Land-Use Planning Committee has provided for establishing twelve technical advisory committees. Each of these technical committees is composed of a Washington nucleus of 15 to 20 members drawn mostly from the staffs of the various Federal Departments and agencies, and about an equal number of corresponding members outside of Washington. The list of these technical committees and the names of their chairmen are as follows:

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I. Adjustment in Sub-marginal Areas - L. C. Gray, Principal Agricultural Economist in Charge, Division of Land Economics, Bureau of Agricultural Economics, U. S. Dept. of Agriculture, Chairman.

II. Adjustment and Reorganization in Better Farming Areas - C. L. Holmes, Principal Agricultural Economist in Charge, Division of Farm Management and Costs, Bureau of Agricultural Economics, U. S. Dept. of Agriculture, Chairman.

III. Land Inventories and Land Classification - C. F. Marbut, Principal Soil Scientist in Charge, Soil Surveys, Bureau of Chemistry and Soils, U. S. Dept. of Agriculture, Chairman.

IV. Agricultural Outlook - O. C. Stine, Principal Agricultural Economist in Charge, Division of Statistical and Historical Research, Bureau of Agricultural Economics, U. S. Dept. of Agriculture, Chairman.

V. Forests, Parks, Recreation, and Wild-life Preservation Areas - E. A. Sherman, Associate Forester, Forest Service, U. S. Dept. of Agriculture, Chairman.

VI. Agricultural Credit - R. C. Engberg, Statistician-Economist, Federal Farm Loan Bureau, Chairman.

VII. Adjustment and Reorganization in Taxation in Relation to Land Use - Eric Englund, Assistant Chief, Bureau of Agricultural Economics, U. S. Dept. of Agriculture, Chairman.

VIII. Oil, Gas, and Other Mineral Rights Underlying Farm Lands - (It was decided not to set up this committee at this time, and therefore its chairman has not been designated.)

IX. Public Range Policy - James T. Jardine, Chief, Office of Experiment Stations, U. S. Dept. of Agriculture, Chairman.

X. Reclamation, Drainage, and Irrigation Policies - W. W. McLaughlin, Chief, Division of Irrigation, Bureau of Agricultural Engineering, U. S. Dept. of Agriculture, Chairman.

XI. Control and Direction of Land Settlement - John D. Black, Chief Economist, Federal Farm Board, Chairman.

XII. Land Values and Valuation - G. C. Haas, Assistant Chief Economist, Federal Farm Board, Chairman.

Problems under Immediate Consideration by the National Land-Use Planning Committee or by Its Technical Committees

The names of these technical committees, particularly those on Outlook, Credit, and Taxation, might suggest that the National Land-Use Committees are giving consideration to problems that lie well outside the field of land utilization. These subjects, however, are closely correlated at a number of points with land use problems.

For example, land use policies and plans are essentially dependent on a careful determination of the outlook for consumption requirements for farm and forest products, foreign trade in such products, prices and other economic conditions and such a long time outlook needs to be continually modified to keep it abreast of changing conditions. The Outlook Committee has been asked to supply from time to time careful estimates for the Nation as a whole and ultimately for specific regions.

Taxation and land utilization are intimately related. As already noted, the extent and character of the tax burden on farm and forest lands largely determine the possibilities of their use by private enterprise and exert an important influence on character of land use. The types and distribution of land uses, in turn, have an important bearing on local expenditures and on the structure and functions of local government. The taking over of large areas into public ownership necessitates careful consideration of the bearing of such acquisition on State and local taxes and expenditures.

Both of the Land Use Committees have recognized the importance of relieving the burden on farm and forest lands. Such relief may in part be effected through governmental economies, but may in part be dependent on the development of other sources of State and local revenue. In view of this possibility the two Land Use Committees have passed resolutions and lent their support to the movement for a better coordination of Federal and State systems of revenue so as to eliminate the present competition between the Federal Government and the States and among the several States to obtain revenue from the same sources, such as income taxes, gasoline and other special sales taxes, etc.

The problems of credit also touch the land use problem at a number of points. Extensive areas have been taken over by credit agencies through foreclosure proceedings, and the disposition to be made of these areas is an important problem not only for the agencies themselves but also from the standpoint of public welfare. Future foreclosure policies also have a significant bearing on the land problem. The National Land-Use Planning Committee has a subcommittee working on these problems. The technical committee on credit has also been asked to analyze the operation of the system of seed loan credit from the standpoint of its bearing on land utilization to determine, for example, whether the system operates to encourage the continued occupancy of lands that are not suitable for

agricultural use; to consider the desirability of replacing the present policy by a system of production credit adapted to the needs of small farmers; and to determine ways and means for coordinating this system with other existing systems of credit.

A problem to which the two Land-Use Committees have given early attention is the back-to-the-land movement of the unemployed. Inasmuch as the land utilization movement largely grew out of a recognition of the wastes and maladjustments resulting from scattering and planless land settlement, the Committees could not ignore the probable ill consequences both to the unemployed themselves and to rural communities that might arise from a planless diffusion of the unemployed throughout the country-side. On the basis of a report prepared by its technical committee on land settlement, the National Land-Use Planning Committee agreed upon a statement of principles that should apply in a movement of the unemployed to the land. This report, which was also approved by the Advisory and Legislative Committee on Land Use, has been widely distributed by the President's Committee on Unemployment as well as by the Land Use Committees. The report points out the limited possibilities for early relief of unemployment through land settlement, since the easily available opportunities have already been taken advantage of by those unemployed individuals and families that had retained some connection with the country. The report recognizes some possibilities of relief through gardening projects within the environs of cities and also the soundness of the tendency for urban workers to establish homes in suburban areas with a view to supplementing their industrial wages. The report recommends that the Secretary of Agriculture, in cooperation with various Federal and State agencies, be authorized to provide needful guidance and direction to those unemployed seeking to return to the land, and in such manner as to avoid making them a burden on already overburdened rural communities.

In accordance with resolutions of the Chicago Conference, the National Land-Use Planning Committee is also devoting study to the possibilities of more adequate control of land settlement through information to settlers and settlement agencies, State and Federal laws for preventing misrepresentation and fraud in the sale of land, and local zoning to prevent scattering settlement detrimental to public welfare. Study is also being given to the better coordination of farming and industrial employment through so-called part-time farm homes in the vicinity of cities and the various industrial adjustments that will permit a better coordination of agriculture and industry.

The technical committee on reclamation, drainage, and irrigation policies has been asked to concentrate its attention for the present with a view to making recommendations on two problems - (a) the restoration and reorganization of financially embarrassed drainage and irrigation districts and (b) regulation of the use of underground water in arid regions. Ultimately the committee will undertake a careful consideration of national reclamation policies in the light of changing conditions.

The two Land-Use Committees have devoted considerable study to the problems of the public domain. The Washington members of the technical

advisory committee on public range policy have recommended the approval of the Colton bill (H.R. 11816, 72d Congress, 1st Session), which provides for administration of the grazing resources of the public domain by the Department of the Interior, with a view to the conservation and rehabilitation of those resources. The bill has the approval of the Secretary of the Interior and the Secretary of Agriculture. Further consideration will be given to this and related matters by the two Land-Use Planning Committees in the immediate future.

The technical committee on land classification is dealing with that subject in its physical aspects while the technical committee on adjustments in submarginal areas is working on the economic aspects of land classification. The former committee is undertaking to make a physical classification of the United States into subdivisions which are more or less homogeneous in physical character, and proposes to develop, in cooperation with State agricultural experiment stations, a series of ratings of the physical adaptability of the various areas for different uses. This committee also expects to indicate the physical consequences of different uses in various areas in terms of soil erosion and impairment of soil fertility.

In addition to considering methods of economic classification, the technical committee on adjustments in submarginal areas, in conjunction with the technical committee on forests, parks, recreational areas and wild life refuges, is studying the various questions of State and Federal policy suggested by these titles such as, what classes of land should be publicly acquired and for what purposes, in what amounts, and by what agencies of government; various ways of promoting reforestation and conservation of timber and of soil on privately owned lands, methods of removing from agricultural use lands not adapted to the purpose; disposition to be made of tax delinquent land; and the various institutional and fiscal adjustments made necessary by changed conditions of land use.

The technical committee on adjustments in the better farming areas is devoting primary attention to tracing and outlining the changes taking place in types of farming in various parts of the country, regional maladjustments, modifications in farm organization and practice necessary to correct these maladjustments, and methods of better coordinating the research work now being carried on by various Federal and State agencies with a view to more effectively answering these questions.

The technical committee on land values is giving consideration to values and valuation methods in relation to land-use, to methods of more effectively analyzing the trends and determining the outlook for land values, and methods and machinery for more effective and economical land appraisal.

It will be obvious that the careful consideration of all these complicated questions by the various technical committees and ultimately by the two Land-Use Committees cannot be the work of a moment. While the committees cannot hope to prove infallible, nor expect full agreement

with their recommendations on controversial subjects, they recognize the obligation of a careful weighing of the various aspects of every question on which they may undertake to formulate a judgment or recommend action.

List of Members of the National Land-Use Planning Committee and of the National Advisory and Legislative Committee on Land Use

National Land-Use Planning Committee

F. D. Farrell, President, Kansas State College .....Chairman
Nils A. Olsen, Chief, Bureau of Agricultural Economics,
U. S. Dept. of Agriculture .....Vice-Chairman
L. C. Gray, Principal Economist in Charge, Division of Land Economics, Bureau of Agricultural Economics,
U. S. Dept. of Agriculture ..... Executive Secretary
H. G. Knight, Chief, Bureau of Chemistry and Soils,
U. S. Dept. of Agriculture
S. H. McCrory, Chief, Bureau of Agricultural Engineering,
U. S. Dept. of Agriculture
C. W. Warburton, Director of Extension Work,
U. S. Dept. of Agriculture
R. Y. Stuart, Chief of the Forest Service,
U. S. Dept. of Agriculture
Sam H. Thompson, Member, Federal Farm Board
John H. Guill, Member, Federal Farm Loan Board
Elwood Mead, Commissioner, Bureau of Reclamation,
U. S. Dept. of the Interior
W. C. Mendenhall, Director, Geological Survey,
U. S. Dept. of the Interior
Charles C. Moore, Commissioner, General Land Office,
U. S. Dept. of the Interior
A. R. Mann, Provost, Cornell University
H. A. Morgan, President, University of Tennessee
H. L. Shantz, President, University of Arizona
C. B. Hutchison, Dean, College of Agriculture,
University of California

National Advisory and Legislative Committee on Land Use

Cully A. Cobb, Vice-President and Editor, Progressive Farmer and Southern Ruralist ..... Chairman
L. J. Taber, Master, The National Grange.....Executive Secretary

American Farm Bureau Federation

Charles E. Hearst, Vice-President, American Farm Bureau Federation
C. R. White, President, New York State Farm Bureau Federation
R. W. Blackburn, President, California Farm Bureau
Earl C. Smith, President, Illinois Agricultural Association

American Forestry Association
Henry S. Graves, Dean, School of Forestry, Yale University

American National Livestock Association
F. E. Mollin, Secretary, American National Livestock Association

American Railway Development Association
Ralph W. Reynolds, Commissioner of Agricultural Development and Colonization, C. M. St. P. and P. R. R.

American Society of Agricultural Engineers
L. J. Fletcher, Caterpillar Tractor Company

Association of American Agricultural Editors
Cully A. Cobb, Vice-President and Editor, Progressive Farmer and Southern Ruralist
Dan A. Wallace, Directing Editor, The Farmer
James M. Kirkham, Assistant General Manager, The Deseret News

Chamber of Commerce of the United States
J. S. Crutchfield, President, American Fruit Growers' Incorporated

Farmers' Educational and Cooperative Union of America
John A. Simpson, President, Farmers' Educational and Cooperative Union of America
E. E. Kennedy, Secretary, Farmers' Educational and Cooperative Union of America
H. G. Keeney, President, Nebraska Farmers' Union
Glenn Miller, President, Iowa Farmers' Union

National Association of Commissioners and Secretaries of Agriculture
Arthur W. Gilbert, Secretary, National Association of Commissioners and Secretaries of Agriculture

National Cooperative Council
C. O. Moser, President, National Cooperative Council
N. P. Hull, President, Michigan Milk Producers' Association
Quentin P. Reynolds, General Manager, Eastern States Farmers' Exchange
S. D. Sanders, President and General Manager, Washington Cooperative Egg and Poultry Association

The National Grange
L. J. Taber, Master, The National Grange
E. A. Eckert, Secretary, Executive Committee, The National Grange
Albert S. Goss, Master, The Washington State Grange
Fred J. Freestone, Master, The New York State Grange

National Wool Growers' Association
Fred R. Marshall, Secretary, National Wool Growers' Association.

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NATIONAL LAND-USE PLANNING COMMITTEE

AND

NATIONAL ADVISORY AND LEGISLATIVE COMMITTEE ON LAND USE

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Suggested Principles of State Legislation Relating to the Use of Underground Waters

Publication No. III
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March, 1933.

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SUGGESTED PRINCIPLES OF STATE LEGISLATION RELATING TO THE USE OF UNDERGROUND WATERS

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Underground waters form a natural resource of vital importance in many areas, especially in the Western States. The demands made upon the available supplies are growing. Unregulated competition for the use of these limited supplies leads to conflict and confusion, to ill-considered development and the unwise use of land, and to great individual and social losses.

Regulation through appropriate legislation of the use of these naturally restricted supplies of underground water would go far to eliminate these difficulties and would do much to promote the best use of our land resources. The longer such regulation is deferred, the more involved and difficult the problem becomes.

Believing that adequate regulation of underground waters is essential to wise land utilization, the National Land-Use Planning Committee* and the National Advisory and Legislative Committee on Land Use* have approved and adopted the following report, which was based on a report prepared by the Planning Committee's Technical Advisory Committee on Reclamation, Drainage and Irrigation Policies*. At the present time the problem appears to be one primarily for action by the States.

The National Land-Use Planning Committee and the National Advisory and Legislative Committee on Land Use commend to the affected States for their serious and early consideration the principles of legislation suggested herein.

Underground Water Laws

The 1930 Census of Irrigation discloses that the area either wholly or partly supplied by pumps nearly doubled during the 10-year period ended in 1929, and is now almost one-third of the total irrigated area; and that the investment in enterprises using pumped water tripled and is now more than half the total investment in all irrigation enterprises. The investment in enterprises wholly dependent upon pumped water is now close to $400,000,000.

Control over underground waters is in general a function of the State Government, not of the Federal Government, except where Federal

*A list of the membership of these committees is included at the end of this report.

interests or the interests of several States are involved. The right of the State to control the use of the waters within its boundaries as between its own citizens is recognized in Kansas v. Colorado, 206 U. S. 36. That case, however, held that where the interests of different States are involved they must be adjusted on the basis of equitable apportionment. This doctrine of equitable apportionment is followed in the later decisions of the court in Wyoming v. Colorado, 259 U. S. 419; Conn. v. Mass., 282 U. S. 660, and New Jersey v. New York, 283 U. S. 336. At this time there does not appear to be any necessity for legislation by Congress for the regulation of Federal or conflicting State interests and accordingly no recommendation is made for Congressional action on the subject.

A few Western States have enacted laws relating to underground waters, the only really comprehensive statute being that of New Mexico. In several States the courts have adopted the rule of correlative rights; in at least one, the courts have held that priorities shall govern; and in the others the common-law rule obtains, under which percolating waters belong to the overlying landowners.

Owing to differences in the several State constitutions and court rulings, and to other local variations, a uniform law is not being recommended for passage; rather, a set of principles has been formulated upon which State legislation relating to the use of underground waters may be based. These principles recognize that existing rights may not be abrogated by statute. However, the statutory adjudication of rights from surface streams is established practice in a number of States, and it would appear equally possible from a constitutional standpoint to set up machinery for adjudicating all existing rights to underground waters as well.

In the statement of suggested principles which follows, the general principles have been segregated from those details which should be considered by a law-making body and adopted, modified, or disregarded, depending upon the legal and physical necessities involved.

The need for public regulation of underground waters has become increasingly pressing. Probably the greatest single factor in deterring this regulation has been what appeared to be insurmountable difficulties in identifying the limits of underground water areas, in tracing the movement of percolating water, and in distinguishing between percolating waters and waters flowing in definite underground channels. However, we are now advised that with the present technique it is possible to determine the amount of water available to an underground basin, and to determine the source, direction of movement, and ultimate disposal of such waters. The suggested principles are believed to lay the foundation for the enactment of laws which appear increasingly necessary.

PRINCIPLES OF STATE LEGISLATION RELATING TO THE USE OF UNDERGROUND WATER.

1. Subject to rights of the Federal Government, declare all unappropriated underground waters to be public waters of the State, subject to appropriation for beneficial use.

Subject to rights of the Federal Government, declare all unappropriated underground waters, whether flowing in definite channels, or standing in lakes or basins, or percolating through the soil, in areas of which the boundaries may be ascertained and defined, to be public waters. The appropriation thereof and acquirement of rights thereto should be made subject to regulation by the State authorities to the same extent as in case of surface waters.

Consider the desirability of distinguishing the use of water for irrigation, industrial, and municipal purposes on the one hand from the use for stock-watering, domestic and culinary purposes from small wells. Any exemption should extend only to those small users, and not to the larger users whose withdrawals will materially affect the supply.

2. Protect individual vested rights to underground waters.

The law should clearly define a vested right, and should provide that vested rights shall not be interfered with. For example, a vested right in this connection might be defined as the right to use underground water from a certain well or tunnel, not exceeding its present capacity, for the beneficial and economical irrigation of crops on certain described land, or for industrial or other designated purposes, acquired under the laws of the State by physical appropriation and use. It would be advisable to require all claimants of vested rights to file declarations of their rights within a reasonable time after passage of the law; and to provide that no vested rights shall be recognized as valid unless so declared or unless defined in a court decree. The declaration would then constitute the extent of such vested right until modified by court decree in a proper proceeding, and no enlargement upon such right should be permitted without following the procedure outlined for acquirement of new rights.

In order to strengthen the purpose of the law, and to avoid unnecessary conflict with vested rights, it would be desirable to state that after the passage of the act no owner or occupant of land should be entitled, solely by virtue of such ownership or occupancy, to withdraw underground water from his own land for from any other land except for specifically exempted purposes; but that the right to make withdrawals thereafter shall be based either upon a beneficial use made prior to passage of the act, or upon application to the State authorities for a permit; and in any event shall conform to the terms of the act.

3. Vest the State Engineer, or corresponding official or commission, with administration of the law.

The State Engineer, or other designated official, should be directed

to prescribe uniform forms of application to drill wells and construct tunnels and to use underground waters therefrom, and uniform forms of well-drilling contracts and specifications; and to prescribe necessary rules and regulations for carrying the act into effect.

Require applications to and permits from the State Engineer before making any use of underground waters, except for any purposes exempted. Perfection of the right thus initiated would result in the granting of a license. Failure to use the water over a period of, say, four or five years would constitute grounds for revoking the license and forfeiting the water right. Authorize the State Engineer to approve changes in location of wells, or of places of use, provided the rights of others are not impaired.

In case users of water from small domestic wells are exempted from applying for permits, require them to file information of the well with the proper State official. This is advisable for the information of the State Engineer and for protection of the small user.

Authorize the State Engineer to employ such technical and clerical help as necessary to carry out the provisions of the act; and prescribe the method and source of revenue to pay expenses therefor, e. g., direct appropriation, filing and license fees, taxes by counties or other political subdivisions, or taxes by underground water districts.

Provide that all applicants and others aggrieved by any action of the State Engineer may appeal to the courts for redress.

4. Provide for investigations of underground waters and for designation of administrative areas.

Authorize the State Engineer, in cooperation with State and Federal agencies, to make as complete investigations as practicable as to the quantity, source, direction of movement, possibility of storing, and ultimate utilization and disposal of underground waters in each area susceptible of development.

Provide for designation of the limits of underground water systems, basins, or other areas within which underground water conditions are closely related. Consider the advisability of designating such areas by legislative enactment, or of delegating this duty to the State Engineer, subject to review by an administrative board or by the courts.

The permit and license should limit the quantity of water to be withdrawn thereunder in any season; with a proviso that additional withdrawals applicable to any area designated as above may be authorized by the State Engineer temporarily whenever conditions justify. Withdrawals per acre of water right specified in the permits and licenses, and the excess withdrawals subsequently authorized for temporary periods, would be made to depend upon the conditions affecting each area designated, and would be made uniform throughout such area, or throughout a subdivision of such area.

5. Protect holders of rights to underground waters from excessive withdrawals.

Before granting a permit, require a hearing by the State Engineer at which any person may advocate or remonstrate against the granting of the permit. Basing his conclusions upon his own investigations and upon testimony presented at the hearing, the State Engineer will determine whether there is any unappropriated underground water in the designated area; if the approximate quantity of underground water available for beneficial use within the area equals or is less than the total requirements for beneficial use under existing appropriations, he will be required to deny the application.

6. Provide for adjudication of rights to underground waters.

This appears necessary, particularly in areas where existing rights are extensive. The machinery for such adjudication would be modeled so far as practicable upon that now provided for statutory adjudication of rights to surface waters.

7. Authorize the State administrative officials to require periodical reports from beneficiaries of the law.

Well drillers should be required to submit periodical reports of work done, logs of wells drilled, and characteristics of the underground water supply, together with samples of water when required.

Holders of permits and licenses should be required to submit annual statements showing elevations of water, amount and time of use of water, manner of utilization, and such other information as may be called for. Such information, if properly presented, should be of material assistance to the State Engineer in administering the underground water law effectively at minimum expense.

8. Provide for public supervision over installation of works.

The State Engineer should have authority to make uniform regulations as to the distances which underground waters flowing in streams of specified volume may be transported in conduits of specified types from the place of discharge to the place of use; and also regarding the size and character of reservoirs for storing underground waters. He should have authority to require the repair or alteration of any conduit or structure which is causing unnecessary loss of water. Prescribe penalties for failure to comply.

The drilling of wells and the selection and installation of well-casings and capping appliances should be made subject to specifications promulgated by the State Engineer and subject to his approval in each case.

Consider the desirability of requiring well drillers to give bonds for satisfactory work, to be released upon approval of such work by the State Engineer.

9. Provide for prevention of waste and contamination of underground water supplies.

Declare the intention of the legislature by the exercise of the police power of the State to prevent waste of underground water, and prescribe penalties. Define waste of underground water; e.g., as the unnecessary loss of such water, before or after reaching the surface of the ground, resulting from the voluntary act of the person entitled to use the water, or from faulty casing or capping appliances, or from neglect to cap the well securely, or from failure to control the flow properly after leaving the well.

Declare the intention of the legislature to prevent the pollution and contamination of the underground water supply of the State. Give the State Engineer authority to require the casing, plugging, or capping of any well which encounters salt water or water containing mineral or other substances injurious to vegetation or agriculture, in such manner as to prevent effectively such water from escaping from the strata in which found into any other water-bearing strata or onto the surface of the ground.

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THE UNIVERSITY OF

CONSERVATION OF THE GRAZING RESOURCES OF THE REMAINING PUBLIC DOMAIN

Publication No. IV
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CONSERVATION OF THE GRAZING RESOURCES OF THE REMAINING PUBLIC DOMAIN

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Summary of Conclusions

There remains in the ownership of the Federal Government approximately 176,000,000 acres of unreserved and unappropriated public land situated almost wholly in the eleven Western States. In addition, there are approximately 60,000,000 acres that have been withdrawn from entry for various purposes, such as mineral lands, stock driveways, nontillable reclamation lands, and water power sites. For most of this vast area the most suitable surface use is grazing. Through lack of regulation, however, this valuable natural resource has been allowed seriously to deteriorate. Without regulation, further progressive destruction is inevitable.

Such waste should not be permitted to continue. It is the result of a shortsighted policy which in the end benefits no one and which, if continued, will result in reduction of large areas to eroded, barren wastes. The livestock industry of the eleven Western States is not the only interest concerned, for farmers and stockmen of the Middle West and other States to the East rely upon the public range States for large annual supplies of stockers and feeders. Denudation of watersheds, furthermore, increases flood hazards, promotes the siltation of irrigation reservoirs and ditches, and jeopardizes the water supply for irrigation, urban consumption, and other uses.

These lands are the property of the Federal Government. It is the responsibility, as well as the right, of the Federal Government so to protect, manage and improve these lands as to make them of the highest productive use, to stabilize the livestock industry, to protect watersheds, to check erosion and to control floods. Exercise of this obligation has been prevented through failure to provide the necessary legislation.

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The need for regulation is now generally recognized. The question of first importance, therefore, is the establishment of authority and machinery which will make such regulation possible. Various proposals have at different times been made.

The National Land-Use Planning Committee and the National Advisory and Legislative Committee on Land Use have approached the problem with a view to recommendations which promise earliest and best working out of land use to meet the problems involved. After careful consideration of the facts and a study of various recent proposals as assembled by the Planning Committee's Technical Advisory Committee on Public Range Policy, the two Committees have concluded that the principles contained in H. R. 11816 (72d Congress, 1st Session)[1], as that bill was reported to the House on February 7, 1932, by the Committee on Public Lands, provide the essentials of the legislation so long needed. In the firm belief that action should no longer be delayed, the National Land-Use Committees endorse the principles of that Bill and urge their early enactment into law.

The Committees wish to emphasize that they have not overlooked or considered lightly the viewpoint which favors granting these lands to the States. The Committees, however, are impressed with the fact that the principles of H. R. 11816, as that Bill was reported out on February 7, 1932,[2] extend sorely needed immediate relief, do not preclude other methods of final disposition of all or parts of the public domain as may later be determined upon, and if adopted, will result in these lands being turned over to the States in better condition than otherwise will be the case should their cession to the States be ultimately agreed upon. The best possible use of these lands can be brought about more promptly and effectively through Federal regulation, at least for an initial period, than by turning the lands over to the States at this time.

[1] "A Bill to stop injury to the public grazing land by preventing overgrazing and soil deterioration, to provide for their orderly use, improvement, and development, to stabilize the livestock industry dependent upon the public range, and for other purposes."

[2] In this report all references to this Bill are to the form in which it was reported out of the Committee on Public Lands of the House of Representatives on February 7, 1932.

QUESTIONS INVOLVED IN THE DISPOSITION AND USE OF REMAINING PUBLIC DOMAIN LANDS

The many questions to be considered in deciding upon a policy for disposition and use of the remaining unappropriated and unreserved public lands are indicated in the following statement from the report of the President's Committee[3] on this subject:

> "The primary problem submitted by you to the committee involved the use and disposition of the surface of those public lands. However, the attempt to find an acceptable formula which would place these lands in some kind of much needed public control and supervision inevitably led the committee into the fields of reclamation, national forests, flood control, power sites, reservations and withdrawals for minerals, including oil and gas and other nonmetalliferous resources, national parks and monuments, bird refuges and game preserves, Indian reservations, military and naval reservations, and in fact all of the multifarious governmental activities, both State and Federal, which are linked with the administration of the public domain."

In arriving at its recommendations, the National Land-Use Planning Committee and the National Advisory and Legislative Committee on Land Use endeavored to take into account all facts and circumstances involved. The following considerations are of special significance:

1. The extent of interstate use of the lands in question for grazing purposes and the difficulty of greatly reducing this interstate use in a short time.

2. The interstate, regional and even national aspects of watershed protection, reclamation and flood control.

3. The problem of actually working out coordinated use of the land in question with use of the 130,000,000 acres of national forests, and over 200,000,000 acres of other Federal reservations and withdrawals, along with nearly 50,000,000 acres of State land and more than 200,000,000 acres of privately owned land.

4. The importance of working out effective units for livestock production by consolidation through exchange of Government lands for State or private lands.

5. The necessity of regulating grazing over watersheds as a whole regardless of State boundaries in a way to improve rather than further to injure the grazing resource and interfere with run-off.

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[3] Report of the Committee on the Conservation and Administration of the Public Domain, January, 1931, p. 10. (Washington: Government Printing Office, 1931)

6. The importance of such reservations as may be vital for other public services.

7. The difficulty of meeting these questions if the lands are turned over to the States before there is reasonably uniform regulation, administration, and coordination among and between the States on the use of such lands; and the improbability of early realization of such uniformity through adequate State legislation and organization for administration.

Appreciation of the relation of the lands in question to other lands of the public land States and an understanding of the important uses which these lands serve are essential to the formulation of a land-use policy. The following brief statements were, therefore, compiled in arriving at conclusions basic to recommendations.

AREA AND DISTRIBUTION OF UNRESERVED AND UNAPPROPRIATED LANDS IN RELATION TO OTHER LANDS

The area and distribution of remaining unreserved unappropriated public lands are approximately as given in Table 1. The comparative figures for other lands serve to indicate by acreage and distribution the close relationship, and its probable bearing upon disposition and use of the remaining public lands.

The problem under consideration is to formulate a national policy for the disposition and use of that portion of the lands designated in the table as unreserved and unappropriated public lands, approximately 176,000,000 acres, together with a considerable part of the surface of the withdrawn areas. Obviously such policy has in view the development and maintenance and the best use of the lands in meeting the many purposes and activities which to considerable degree involve not only the public lands in question, but the larger total area indicated by the various classifications listed in Table 1.

GRAZING USE

The public domain, along with practically all other unfenced land, has always been a grazing commons for unrestricted use by all comers. No legal control of mode of use has ever been authorized or exercised over these Federal lands. Fencing of these Federal lands has been prohibited.

Without regulation of the numbers of stock, of the time of grazing, and of the methods of management of stock, cumulative deterioration of the range is inevitable. Today many large areas are greatly reduced in grazing capacity and some of them are depleted until they are practically unfit for grazing in their present condition. Erosion has increased and the problem of range improvement is thereby made more difficult. Increased frequency and violence of floods and the consequent damage in some localities has added much to the problems of the occupants of farmed lands and the control of irrigation waters.

Table 1. - The Major Features of the Land Tenure of the Eleven Western States

* (Note:-These States contain 99.4% of the remaining Public Domain)

State	Total Land Area	Federal Lands: Unappropriated and Unreserved ("Public Domain")	Federal Lands: Reserved National forests, parks, Indian reservations & all others	Federal Lands: Lands Withdrawn for minerals, water power, water resources, reclamation, stock driveways, etc. 1/	State Lands (All kinds)	"Difference" Approximate area of private lands 2/
	Acres	Acres	Acres	Acres	Acres	Acres
Ariz.	72,838,400	14,366,400	29,762,238	6,509,848	9,036,357	11,330,702
Calif.	99,617,280	16,646,948	21,487,095 3/	8,755,721 3/	1,352,137	49,895,591
Colo.	66,341,120	7,657,140	14,103,572 3/	5,510,137 3/	3,604,216	33,236,446
Idaho	53,346,560	11,485,927	19,690,306	2,790,058	4,108,704	12,717,572
Mont.	93,568,640	6,410,032	17,777,852	10,465,033	5,330,512	45,350,110
Nev.	70,285,440	51,399,296	5,982,443	6,118,720	160,809	5,414,181
N.Mex.	78,401,920	14,383,995	13,793,372	15,978,939	9,652,948	19,310,883
Oreg.	61,188,480	12,982,257	14,894,633	3,381,112	1,285,699	27,367,577
Utah	52,597,760	25,157,000	8,784,889 3/	7,483,404 3/	3,154,687	6,597,531
Wash.	42,775,040	930,389	11,059,302	2,020,383	4,137,288	23,384,597
Wyo.	62,460,160	15,256,530	11,821,101 3/	7,123,380 3/	3,623,734	20,672,958
Totals	753,420,800	176,075,914	168,556,803 3/	76,136,735 3/	45,677,091	255,268,148

Latest available data.

These data are given in greater detail in Appendix Tables A-D.

1/ Includes considerable areas of lands of other tenure for which exact data are not obtainable. These totals are consequently somewhat too large and the "Differences" derived by using them are correspondingly too small.

2/ Urban areas and the areas of unperfected entries and allotted Indian lands not yet patented are omitted from the table, and are not accounted for in the "differences".

3/ The following Navy oil reserves are duplicated in Mineral withdrawals: California, 68,249 acres; Colorado, 59,168 acres; Utah, 91,464 acres; Wyoming, 9,481 acre

Any policy of management of the range lands must take account of all the related problems of the other lands correlated with them. There is general agreement that such changes as are attempted should be accomplished without depriving the livestock industry of the use of these lands. About 50 per cent of the sheep and about 16 per cent of the cattle of the United States are raised in the public land States involved. The development and maintenance of this vast industry is dependent on the public range. The farming development and welfare likewise are correlated with the livestock industry which uses the range lands.

Disposition of the lands in question should guarantee use under such practical restrictions as will result in improvement of the grazing resource. This will involve proper seasons of grazing, prevention of overstocking, and good management of stock through water development, fencing, proper handling of stock, and other well known practices.

Ranches and investments in operating improvements and equipment representing the work of a lifetime have been built up, supplementing private lands by use of the unadministered public domain, the grazing privileges on national forests, and by the rental of other lands. No argument should be necessary to demonstrate that a policy of conservation and its administration should safeguard those who have made their investments and become established under the existing system. Some localities are overstocked and the purposes of regulation and wise land use will necessitate reductions and adjustments. Advance planning and legislation can not wisely go further than a clear statement of principles and responsibilities in this regard and the providing of proper authority.

Interstate Use of Lands

State boundaries rarely coincide with those of natural areas having a single principal use, consequently the actual use disregards State lines in many cases, at least to the degree that State laws will permit. This condition is particularly true of the Great Basin region, where snow makes the utilization of desert feed easy in the winter and desert dryness drives grazing animals to the uplands and mountains in summer. The preliminary data in Table 2 show some of the interstate movements of stock in the States that include the Great Basin. This condition is especially true in such States as Idaho, Utah and Nevada. The following data show approximately the interstate movement of livestock for these three States. Similar data are not available for other States. From Idaho, for example, 257,000 sheep go to Utah, Nevada or Oregon for winter grazing and 86,400 to Wyoming, Nevada, or Utah for summer grazing. On the other hand, 25,000 sheep from other States secure spring and fall grazing in Idaho, 195,000 secure summer grazing and 131,000 secure winter grazing in Idaho.

The fact that over 300,000 Idaho sheep go into other States for grazing and about as many from other States come into Idaho might raise the question as to why grazing is not confined to the respective State except for surplus. Perhaps ultimately advantageous adjustment through exchange and transfers might be brought about. But in deciding a policy for disposition and use of the remaining public lands the major problem of interstate

movement of stock, as indicated by the foregoing data, is an important one to be met. It involves not only use of the lands in question, but coordination of their use and administration of range in national forests, on other Federal lands, State lands, and private lands.

Consolidation of Range to Promote Economical Livestock Production and Best Use of Range

The interstate movement of stock represents only one phase of the shifts from area to area and from range to farm or ranch and to market. In the best interests of range conservation and best use in the interest of the livestock industry, and in the interest of administration of Federal, State, and private lands, a policy for disposition and use of the remaining public lands should include the principles of consolidation of range units for efficient livestock operations through exchange on an equal value basis of Government lands for State or private lands, and for close cooperation in administration and use of the Federal lands in question and national forest ranges to promote such shifts and adjustments as will improve livestock operating units.

Stock Driveways

The ranges within the national forests are used primarily during the summer months for stock grazing on the public domain and private lands or cared for on farms during the remainder of the year. This involves transfer of stock from winter to summer and summer to winter ranges, frequently over long distances and not infrequently interstate. To provide for this movement, the location and segregation of areas for stock driveways has been under way as a policy for years. On June 30, 1930, approximately 9,443,655 acres had been withdrawn from the public domain and reserved for such driveways outside the national forests. The importance of such driveways to the livestock industry in the public-land States is unquestioned. That the number and location of such driveways at present is satisfactory for future needs is not certain. In the disposition of the remaining public lands, therefore, this question of stock driveways adequate for future needs, their location, regulation and control is of importance as bearing upon policy.

Use of Withdrawals for Grazing Purposes

As indicated in a previous section a considerable area of Federal lands is removed from the unreserved, unappropriated public domain by the Federal Government under special withdrawals. For the most part the surface of these lands is used along with the unreserved, unappropriated lands for grazing purposes. A policy for disposition and use of the remaining lands for grazing purposes should include provision for regulation and administration of grazing use on these withdrawn lands and on similar future withdrawals as far as consistent with the purposes of the withdrawals.

Table 2.-Principle Interstate Movement of Livestock for Idaho, Nevada, and Utah.

IDAHO

Sheep

Into State from			Out of State to		
Spring-fall	Summer	Winter	Spring-fall	Summer	Winter
Number from	Number from	Number from	Number to	Number to	Number to
	85,000 Utah	50,000 Utah		20,000 Nev.	60,000 Nev.
	20,000 Nev.	30,000 Nev.			23,000 Oreg.
25,600 Wyo.		1,000 Wyo.		63,000 Wyo.	
	10,000 Mont.	50,000 Mont.			154,000 Utah.
	20,000 Oreg.			3,400 Utah	
	60,000 Wash.				
25,600	195,000	131,000		86,400	257,000

Cattle:

	3,600 Utah			
		500 Nev.		950 Nev.
		1,600 Wyo.	1,241 Wyo.	
				325 Utah
	5,600	2,100	1,241	1,275

Table 2.-Continued

NEVADA

Sheep

Into State from			Out of State to.		
Spring-fall	Summer	Winter	Spring-fall	Summer	Winter
Number from	Number from	Number from	Number to	Number to	Number to
250 Utah		100,000 Utah		20,000 Ida.	30,000 Ida.
		104,400 Cal.			127,670 Cal.
	30,000 Ore.	25,000 Ore.		75,000 Ore.	
					20,000 Utah.
	20,000 Ida.	80,000 Ida.			
		2,000 Wyo.			
250	50,000	311,400		95,000	177,670

Cattle:

		500 Ida.		500 Ida.	
				4,855 Cal.	
				1,150 Ore.	
				350 Utah	
		6,400 Cal.			
		950 Ida.			
		7,850		6,855	

UTAH

Sheep

		235,000 Col.		106,000 Col	50,000 Col.
		20,000 Nev.			100,000 Nev.
		154,000 Ida.		85,000 Ida.	50,000 Ida.
	21,000 Wyo.			22,000 Wyo.	40,000 Wyo.
					100,000 Ariz
	21,000	409,000		213,000	340,000

Cattle:

		254 Col.	150[1]/ Col.		
			2,330 [2]/Col.		
	350 Nev		250 [3]/Nev.		500 Nev.
	3,400 Ida	325 Ida.		3,600 Ida	200 Ariz.
,200 Wyo.	3,400 Wyo				
2,200	7,150	579	2,730	3,600	700

1 Spring
2 Spring, summer, fall
3 Spring.

Homesteads

From the beginning of entries under the 640-acre stock raising homestead law in 1919 until 1931, about 133,350 entries were made. Of this number only about half went to patent. Extensive areas were entered and later abandoned. With full recognition as to the wisdom of homestead laws, their future application should be with a view to protection of the individual who lacks experience and knowledge against wasted effort and perhaps years of sacrifice and hardship through homesteading with no other end than deterioration of the land in question and interruption of the use for which it is best suited. The fact that so little, if any, of the remaining land is suitable for entry and development to support a family would seem to warrant a policy of approving entries only after careful study of the land in question establishes the suitability of such land for the growing of crops and establishment of a home to support a family. Policy in this regard has a bearing upon planning and disposition and use of the lands in question for grazing use.

Range Improvement

With regulated use for grazing purposes, consolidation through exchange and adjustments and coordination with ranch and farm resources, the best use of the lands in question and the best interests of the livestock industry will still require improvements in the way of water development for stock, fences, and perhaps other forms of improvement. A policy for disposition and use of the lands in question should as far as practicable make provision for such improvements through their construction out of revenues from the grazing resources and through cooperation.

Range Research

The improvement and management of range lands to secure their best use for grazing consistent with the many other somewhat conflicting uses has been the subject of research and experimentation only in comparatively recent years. A body of reliable data are accumulating but more are needed. In formulating a policy, thought should be given to provision for supplementing present research of Federal and State agencies by such further range research as may be important in meeting the problems in carrying out policy finally adopted.

Coordination of Grazing on Public Domain with Grazing on the National Forests

A considerable part of the 6,666,206 sheep and goats and 1,370,636 cattle and horses for which grazing permits on the national forests were granted to some 26,000 owners in 1930, use the remaining public domain for part or all of fall, winter, and spring grazing. Under any policy of disposition and use of the remaining range lands, there should be the closest possible cooperation in the grazing administration of the public domain and grazing administration in national forests in the working out and distribution of grazing privileges, number and classes of stock, adjust-

ments as to seasons of grazing, and other matters vital to efficient livestock production and management.

Until authority is provided through legislation for regulated use, State or Federal, of the remaining public lands, little or nothing can be done to bring about better coordination in use.

Cooperation of People

The ultimate success of any policy for disposition and use of the lands in question, especially their major use which is for grazing purposes, will depend upon full cooperation of the people who use the lands. This fact should be recognized not only by all reasonable consideration of prior rights already discussed but by recognition of local people, and perhaps State agencies, in advisory councils.

WATERSHED PROTECTION

Much of the land important for watershed protection in the public land States is now in national forests and receiving proper treatment. However, there are areas of this kind outside the forests in whole or in part that need better care. Watersheds are defined by natural boundaries rather than by State lines and ownership limits. Consequently, many watersheds include areas of more than one State as well as areas of national forests, other public lands, and lands in private ownership. It is doubtful if any State is entirely independent of other States in this particular even physically, and it is certain that legally their economic interests in the distribution and use of the waters are often involved, and sometimes conflict, and require careful cooperative adjustment.

While there are differences of opinion as to the extent and seriousness of existing erosion and its influence upon water conservation and run-off, there is general agreement that erosion is now more rapid than when settlement began and that its proper control is a factor of importance in the conservation of all grazing resources both public and private, in the conservation and best use of all water resources, and in protection against any flood menace, each in its own place and in proper degree.

Erosion will not be prevented entirely, but nature undisturbed tends to establish a state of balance among the factors of soil type, slope, rainfall, and vegetation. On the range lands man has little control as regards the soil, slope, or rainfall. He does have some control of adjustment of the vegetation. That destruction of the vegetation promotes erosion is too well recognized to need argument here. That lack of regulated grazing may lead to complete destruction of vegetation and to erosion of serious proportions is evidenced by what has taken place on many parts of the uncontrolled public lands as well as on privately owned lands. That range lands can be used for regulated grazing and at the same time be gradually returned to near a normal plant cover is amply evidenced by what has taken place where denuded or partly denuded lands have been given proper management.

Water is regarded as public property subject under State laws to private appropriation for beneficial use. Agricultural development of the public land States has been associated, in no small degree, with the development and use of its supplies of water for irrigation. The maintenance and security of investment to date and development in the future are of such importance that disposition and use of the public lands in question involve a public responsibility for rehabilitation rather than further jeopardizing watersheds through improper use of the grazing resources. To meet this responsibility a policy of disposition and use of the lands should assure that regulation of grazing which is necessary for watershed protection.

RECLAMATION

The public lands in question are a part of the vast arid portion of the United States where farming is dependent upon irrigation to a considerable extent. The low water flow of streams was appropriated relatively early after settlement and further development was dependent upon storage of flood waters for use during the dry season. The high cost of such undertakings and the long-time investment necessary led to the enactment of the Federal reclamation act to supplement private enterprise by construction of projects ordinarily beyond resources for private development.

To finance such Federal reclamation salable resources represented by the public domain are drawn upon. Ninety-five per cent of the net proceeds from the sale of lands in the reclamation States and 52½ per cent of the royalties derived under the mineral leasing act of February 25, 1920, are covered annually into the revolving fund for reclamation.

The additions to the fund from sale of lands have declined steadily and will play an insignificant part in the financing of reclamation in future. On the other hand, about 26 per cent of the reclamation fund is from royalties under the mineral leasing act, and the balance largely from repayments by projects. Reclamation in the arid and semiarid West, of which the public lands in question are a part, is increasing in significance to the public as drainage, flood control, erosion, and power assume greater relative importance.

National policy for the disposition and use of the remaining public lands, therefore, should take into consideration the future of the reclamation fund, future needs as to reservoir sites, and protection of water supply, of constructed works, and of lands in projects from avoidable difficulties through erosion and floods. This would call for Federal reservation of such additional areas as may be needed for these purposes and by Federal reservations of mineral resources drawn upon to finance reclamation.

OTHER RESERVATIONS

In the interests of the general public there is an important responsibility in providing such reservations as may be necessary throughout the public lands for military purposes, air transportation, recreation, migratory bird and game refuges, and to meet other public service requirements. These needs should be safeguarded in the disposition and use of the public lands.

REVENUE OF STATES INVOLVED

As indicated in Appendix Table A-1, the unreserved, unappropriated public lands in question constitute 23.4 per cent of the total area of 11 Western States. In addition, a total of over 160,000,000 acres of these same States is in national reservations for forests, Indian reservations, national parks, military reservations, and wild life reserves, as is shown by Appendix Table A-2.

This means that about one-half the area of the States in question is under some form of Federal jurisdiction. In deciding a policy for disposition and use of the remaining public lands, therefore, there would seem to be a clear responsibility:

1. To provide for disposition and use which will promote development and maintenance of the industries of the State.

2. In so far as disposition and use for national purposes limit development of its resources by the State, the State should be compensated in some appropriate way. This is being done now in the form of Federal aid for road construction, aid to reclamation, and return to the States, of part of the receipts from resources of the national forests. The principle thus established should be continued through suitable adjustment in connection with policy for disposition and use of the remaining public lands.

POLICY FOR DISPOSITION AND USE OF LANDS IN QUESTION

The foregoing data and discussion picture briefly the major uses and problems which should be kept in mind in formulating a policy for disposition and use of the remaining unappropriated, unreserved public lands, amounting to approximately 176,000,000 acres in the 11 Western States.

The need for some form of regulation of grazing on these lands has been substantiated by so many investigations, and is now so generally recognized, that further discussion or review of the evidence is unnecessary. The facts at hand are ample on this point; what is needed now is action.

After careful consideration of the problem, in which they have endeavored to take into account all facts and circumstances, the National Land Use Planning Committee and the National Advisory and Legislative Committee on Land Use have concluded that the principles embodied in H. R. 11816 (72d Congress, 1st Session), as that Bill was reported out on February 7, 1932 by the Committee on Public Lands of the House, promise the earliest and most effective working out of a policy that will solve the problems involved. In the opinion of the Committees, this Bill provides the necessary authority and outlines the procedures and activities essential to the development of a land use policy that will best meet the purposes and problems outlined in preceding pages of this report.

The two Committees recognize fully the importance of the question of whether the lands should remain under Federal control with provision for regulation of grazing or should be turned over to the respective States. The problem faced by the States is apparent in the figures already given as to the large proportion of the area of the respective States already under Federal control.

This aspect of the matter has not been overlooked nor considered lightly by the Committees. Their approach to the problem has been solely that of endeavoring to ascertain a line of action which promises promptly and effectively to correct a situation which should no longer be permitted to continue. As has been said earlier in this report, enactment of the principles of H. R. 11816 would not preclude other methods of disposition of the whole or of parts of the remaining public domain as may in future be determined upon, and would, it is confidently believed, result in these lands being turned over to the States in better condition than otherwise is likely to be the case. It is believed that these lands can be built up to their best use earlier and more uniformly throughout this vast area through Federal regulation, for an initial period at least, than by turning them over to the States at this time. The character of the problem to be met clearly appears to require reasonably uniform regulation, administration and coordination. The attainment of such conditions among and between the States can hardly be quickly achieved; and particularly when the present economic and fiscal situation among the States is considered, early realization of such uniformity through adequate State legislation and organization for administration can hardly be expected.

All things considered, therefore, the National Land-Use Planning Committee and the National Advisory and Legislative Committee on Land Use are convinced that the principles embodied in H. R. 11816, as reported out on February 7, 1932, provide for the type of constructive land use which the problem now urgently requires. The two Committees, therefore, endorse these principles and urge that they be enacted into law without further delay.

Table A-1

APPENDIX

The Lands of the Eleven Western States
Classified on the Basis of Tenure.

(These eleven States contain 99.4% of the public domain that is still open for entry)

Table A. Federal Lands

1. Open for entry or entered but not patented.

States	Total land area	Unreserved, unappropriated lands (1931)	Per cent of total	Unperfected entries (1931)	Nontaxable Indian allotments
	Acres	acres	Per cent	acres	acres
Arizona	72,838,400	14,366,400	19.7	1,598,426	172,860
California	99,617,280	16,046,948	16.1	1,709,463	55,841
Colorado	66,341,120	7,657,140	11.5	2,131,471	39,078
Idaho	53,346,560	11,485,927	21.5	2,047,727	441,656
Montana	93,568,640	6,410,032	6.8	3,010,221	5,159,993
Nevada	70,285,440	51,399,296	73.1	1,183,549	14,966
New Mexico	78,401,920	14,382,995	18.3	4,949,800	302,577
Oregon	61,188,480	12,982,257	21.2	799,259	370,143
Utah	52,597,760	25,157,000	47.8	1,339,091	83,005
Washington	42,775,040	930,389	2.2	185,191	890,929
Wyoming	62,460,160	15,256,530	24.4	4,143,265	193,910
Total	753,420,800	176,075,914	23.4	23,097,454	7,724,958

Table -2

Reserved lands (net areas)

States	Unalloted Indian lands (reservations)	National forests	National parks and monuments	Military, Naval etc. Reservations	Federal wild life reserves	Range reserves	Total reserved
	acres	acres	acres	acres	acres	acres	acres
Ariz.	17,517,658	11,383,458	745,028	57,974	21,120	32,000	29,762,238
Calif	576,069	19,185,824	1,282,316	357,980	84,906	-	21,487,095
Colo.	396,143	13,326,851	313,787	66,791	-	-	14,103,572
Idaho	57,359	19,475,593	77,982	9,022	25,540	44,810	19,690,306
Montana	477,308	16,031,524	1,115,464	9,992	86,755	56,809	17,777,852
Nevada	832,132	4,978,295	593	126,361	45,062	-	5,982,443
N. Mexico	4,886,892	8,482,696	35,757	130,795	74,360	192,872	13,793,372
Oregon	1,123,395	13,424,665	157,894	5,627	183,052	-	14,894,633
Utah	986,720	7,473,020	136,436	120,033	68,680	-	8,784,889
Washington	852,372	9,579,187	539,386	81,128	7,239	-	11,059,302
Wyoming	525,000	8,477,181	2,098,653	80,404	39,863		11,221,101
Totals	28,231,048	131,823,294	6,503,296	1,036,107	636,567	326,491	168,556,803

3. Withdrawn lands 1/

States	Total withdrawals	For reclamation projects 2/ Ultimately irrigable (1931)	For reclamation projects 2/ Nontillable may be restored	Stock driveways (1931)	Mineral 1/ coal, oil, phosphates, potash, etc. (1931)	Water 1/ reserved (1931)	For power 1/ (1931)	Carey Act withdrawals and segregations
	acres	acres	acres	acres	acres	acres	acres	acres
Ariz.	6,509,848	38,674	4,476,513	496,864	148,278	110,235	1,225,539	13,745
Calif.	8,755,721	17,914	6,376,673	33,862	1,377,839	336,538	612,895	-
Colo	5,510,137	9,811	358,653	214,590	4,424,097	9,740	425,720	67,526
Idaho	2,790,058	172,108	879,189	820,706	396,293	17,097	426,371	78,294
Montana	10,465,033	52,595	477,383	227,237	9,480,814	18,496	179,296	29,212
Nevada	6,118,720	18,066	2,307,734	3,564,647	123,218	45,281	59,774	-
N. Mexico	15,978,939	-	139,025	1,101,659	14,363,849	9,566	257,744	107,096
Oregon	3,381,112	14,272	943,925	452,542	4,361	1,282,266	641,896	41,850
Utah	7,483,404	-	460,751	1,221,662	5,126,370	70,326	604,295	-
Washington	2,020,383	14,098	979,888	10,919	691,801	37,847	285,830	-
Wyoming	7,123,380	190,729	1,073,440	1,291,727	3,791,530	204,719	167,497	403,738
Totals	76,136,735	528,267	18,473,174	9,436,415	39,928,450	2,142,111	4,886,857	741,461

1/ Figures for mineral, water reserves, and power are not "net", and are to some extent duplicates of "public domain" figures given in Section 1 of this table. "Net' figures are not available, but a fair estimate is about 60,000,000 acres.

2/ 145,000 acres in Nevada and Arizona for Boulder Canyon project omitted.

Table B State Lands

State	School and other grants	State Parks	State forests	Other State and County 1/	Highways (estim) 2/	Total
	acres	acres	acres	acres	acres	acres
Ariz.	8,939,757	---	---	30,000	96,600	9,066,357
Calif.	738,169	51,723	9,773	64,160	488,312	1,352,137
Colo.	3,061,464	---	---	224,512	318,240	3,604,216
Idaho.	3,025,058	7,838	427,363	433,277	195,168	4,108,704
Mont.	4,577,880	---	200,000	239,000	313,632	5,330,512
Nev.	61,353	---	---	2,000	97,456	160,809
N. Mex.	9,402,000	---	---	156,000	94,948	9,652,948
Oreg.	661,594	7,440	70,113	252,000	294,552	1,285,699
Utah	2,841,132	---	---	243,075	70,480	3,154,687
Wash.	2,161,849	12,816	1,012,289	610,910	339,424	4,137,288
Wyo.	3,584,238	1,120	---	129,000	118,376	3,823,734
Total	39,054,494	80,937	1,739,538	2,37[illegible],034	2,[illegible]27,188	45,077,091

1/ These items may be included in School and Grant Lands.

2/ Estimated from milage.

Table C. Private Lands

State	"Difference" 1/ Approximate area private and urban land	Railroad grant lands and rights of way 2/	Urban 2/ lands (estim)	All other private lands	Total area taxed 1930-31. (For comparison with "Difference")
	acres	acres	acres	acres	acres
Ariz.	11,330,702	2,766,411	31,569	8,532,722	11,969,542
Calif.	49,895,591	4,891,162	382,733	44,621,696	52,209,010
Colo.	33,226,446	120,702	128,228	32,977,516	36,267,008
Idaho	12,717,572	81,721	64,610	12,571,141	13,825,645
Montana	45,350,110	4,643,584	64,887	40,641,639	53,890,558
Nevada	5,414,181	4,155,762	11,476	1,236,943	8,519,173
N. Mexico	19,310,883	2,060,041	29,406	17,221,436	----
Oregon	27,367,577	145,452	107,809	27,114,316	27,175,369
Utah	6,597,531	667,204	89,617	5,840,710	7,577,254
Washington	23,384,597	440,054	166,961	22,777,582	24,672,327
Wyoming	20,672,958	856,109	34,783	19,782,086	--
Total	255,268,148	20,828,202	1,112,059	233,327,887	

Table D.- Area of Agricultural Lands, 1930 Census.
(For Comparison)

State	Land in farms	Total crop land	Irrigated in 1929	Dry-farmed crops 3/
	acres	acres	acres	acres
Ariz.	10,526,627	648,692	575,590	72,905
Calif.	30,442,581	8,389,802	4,746,632	3,643,170
Colo.	28,876,171	8,448,684	3,393,619	5,055,065
Idaho.	9,346,908	4,073,265	2,181,250	1,892,015
Montana	44,659,152	11,398,921	1,594,912	9,804,009
Nevada	4,080,906	494,307	486,648	7,659
N. Mexico	30,822,034	1,799,190	527,033	1,272,157
Oregon	16,548,678	4,172,519	898,713	3,273,806
Utah	5,613,101	1,495,497	1,320,125	171,372
Washington	13,333,778	6,275,350	499,283	5,776,067
Wyoming	23,525,234	2,292,668	1,236,155	1,056,513
Total	217,975,170	49,488,895	17,459,960	32,024,758

1/ The difference between the total land area and the sum of all other categories by States. This figure is less than it should be on account of duplications in different categories for which "net" figures are not obtainable.

2/ The urban area has been estimated from population and the rights of way of railroads are estimated from mileage.

3/ This is the difference between irrigated and crop land. Parts of the areas shown for California, Oregon, and Washington have humid climates.

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E. A. Eckert, Secretary, Executive Committee, The National Grange
Albert S. Goss, Master, The Washington State Grange
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National Wool Growers' Association
Fred R. Marshall, Secretary, National Wool Growers' Association

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NATIONAL LAND-USE PLANNING COMMITTEE

Technical Advisory Committee No. IX, Public Range Policy

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NATIONAL LAND-USE PLANNING COMMITTEE

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FIRST ANNUAL REPORT

(From Date of Organization to June 30, 1933)

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Publication No. V
Washington, D.C.
July, 1933

Other publications issued by the National Land-Use Planning Committee and the National Advisory and Legislative Committee on Land-Use from date of organization to June 30, 1933:

No. I. Resolution with Reference to the Relationship of Urban Unemployment to Land Utilization and Settlement. (Mimeographed.)

No. II. Organization and Objectives of the National Land-Use Planning Committee and the National Advisory and Legislative Committee on Land Use. (Mimeographed.)

No. III. Suggested Principles of State Legislation Relating to the Use of Underground Waters. (Mimeographed.)

No. IV. Conservation of the Grazing Resources of the Remaining Public Domain. (Mimeographed.)

No. VI. The Problems of "Submarginal" Areas, and Desirable Adjustments with Particular Reference to Public Acquisition of Land. (Printed.)

No. VII. Land-Use Planning in the Tennessee River Basin. (Mimeographed.)

This report is No. V in the series.

In addition there have been issued a number of press statements on various subjects.

Copies of these publications may be obtained from the Executive Secretary, National Land-Use Planning Committee, United States Department of Agriculture, Washington, D. C.

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NATIONAL LAND-USE PLANNING COMMITTEE

Publication No. V

First Annual Report

(From date of organization to June 30, 1933)

U. Dept. of Agriculture

The National Land-Use Planning Committee was called to Washington for its first meeting on February 15-18, 1932. During the period of somewhat more than a year which has elapsed, the Committee has developed its organization and made a substantial beginning on the general program outlined at the National Conference on Land Utilization, held at Chicago in November, 1931. It seems appropriate at this time briefly to review the work of this initial period for the information of the members of that Conference, by direction of which this Committee was established, and of the many other individuals and agencies interested in land use planning.

In a statement on "Organization and Objectives," 1/ issued on October 1, 1932, there have already been summarized the pertinent facts as to the origin of the National Land-Use Planning Committee and of its companion organization, the National Advisory and Legislative Committee on Land Use, the functions of each and the relations between the two; their respective fields of activity; the twelve technical advisory committees of experts set up by the Planning Committee; and the major problems then under consideration by the Planning Committee or by its Technical Advisory Committees. A list of the members and officers of each Committee, as well as of the chairmen of the Technical Advisory Committees, was also included therein. The present report and the October 1 statement are, therefore, complementary.

Meetings of the Committee

The Committee, to date, has held eight meetings, all in Washington, as follows:

February 15-18, 1932 (joint with the Advisory and Legislative Committee)
April 4-7, 1932
May 2-4, 1932 (joint with the Advisory and Legislative Committee)
June 20-23, 1932
October 2-4, 1932
November 18-22, 1932 (joint with the Advisory and Legislative Committee)
January 21-24, 1933
May 1-4, 1933

Considerable time, naturally, was devoted in the earlier meetings to perfecting organization and procedure, and to outlining the field so that the Committee's work could be carried on in an efficient and systematic manner. The setting up of the Technical Advisory Committees, whose membership

1/ Publication No. II.

comprises 270 individuals located in all parts of the country, was in itself no small task. The field of land use is of far reaching scope and complexity; many phases of it have been hitherto but little explored; and the goal of the Committee - action and not mere fact finding - requires a careful weighing of the evidence before far reaching revisions in public policy are recommended, especially when those changes involve marked alterations in traditional attitudes toward land use, or the correction of situations perpetuated by years of neglect. Land-use planning is essentially long-time in its character - the work of years and not of months; quick and spectacular results cannot be expected.

During its first year of operation, the Planning Committee feels that gratifying progress has been made. The following pages will briefly summarize the more important developments.

Adjustments in Submarginal Areas

A most important segment of the entire land use problem undoubtedly is that concerned with adjustments in areas submarginal for agriculture. Millions of acres of tax delinquent lands in certain areas have raised the question in concrete and inescapable form.

Various suggestions have been made with regard to the many communities on the poorer or less well situated lands which recent economic changes have left in an especially precarious condition. One suggestion has been evacuation, zoning the land against resettlement, and turning it back into forest. An argument advanced for this approach is that evacuation would lessen competition in the markets for the products raised by farmers in the better farming areas. The taking of the poorer lands out of cultivation is clearly a step whose results operate toward that end. Another proposal has been farm reorganization and the development of other local opportunities. A third has been creation of external conditions, such as modified tax laws, which will enable the community to survive and yet support a wholesome social life. Suggestions of the use of such lands for forestry raise at once such questions as, for example, the future need for forest products, public vs. private ownership, modification of tax laws and the creation of other conditions favorable to private retention of forest lands, and the like. If lands now in agriculture are devoted to forestry, what is to be done with the people? The human side of the problem obviously cannot be overlooked. The problem clearly is also one of the most complex and difficult in the entire field.

In a report printed as Publication No. VI, the Planning Committee has endeavored to make a beginning on this difficult and many sided problem. This report, the first issued by the Committee on the subject of submarginal lands, is based on a joint consideration of the problem made by Technical Advisory Committees I and V, concerned respectively with "Adjustments in Submarginal Areas" and "Forests, Parks, Recreation and Wild Life Preservation Areas".

In this first report particular reference is directed to public acquisition and retention of land. The report undertakes to define submarginal land; to outline general principles governing land classification both physical and economic; to list the major problems found in areas submarginal for

agriculture; to discuss the types of adjustment which appear to be required in submarginal areas; and then, at greater length, to give the need for land acquisition by public agencies, the place thereof in a well balanced national use of our land resources, and to recommend the principles upon which a public acquisition program might best proceed. The report contains what is believed to be the first consistent classification of the various major uses to which land now publicly owned is put, with recommended designations for each. Other section-headings in this part of the report include: major objectives in public acquisition; types of land suitable for public ownership; responsibility of the various public agencies in acquisition and control; and a set of recommendations for procedure in carrying out acquisition, including modifications in the laws governing reversion of tax delinquent lands to the States.

The report, which was also approved by the National Advisory and Legislative Committee on Land Use undoubtedly may be expected to have a wide influence in the rapidly growing land utilization movement and to be much used in the formulation of land use planning programs for submarginal areas.

Three segments of the general problem which are briefly touched upon in the report are now being developed in detail through the technical advisory committees. These are (1) the principles and procedure for classification of rural lands, both on a physical basis and on an economic basis, on which a joint report is in preparation by Technical Advisory Committees I and III; (2) rural zoning and other ways and means of making rural land planning effective in practice on which a report is in preparation by Technical Advisory Committee I, and (3) an estimate of the amounts and locations of various major land uses needed now and in the future, which is being made by Technical Advisory Committee No. V.

Conservation of the Grazing Resources of the Remaining Public Domain

Another land use problem of outstanding importance upon which the Planning Committee made recommendations during the year was that of the conservation of the grazing resources of the remaining unreserved and unappropriated public domain. After consideration of the issues involved and of the mass of evidence which exists on this long-standing problem, the Planning Committee, on the basis of a report prepared by its Technical Advisory Committee No. IX on Public Range Policy, concluded that the principles contained in H.R. 11816 (72d Congress, 1st Session) as that Bill was originally reported to the House on February 7, 1932, by the Committee on Public Lands, provide the essentials of the legislation so long needed. This Bill, generally known as the Colton Bill, is entitled "A Bill to stop injury to the public grazing lands by preventing overgrazing and soil deterioration, to provide for their orderly use, improvement and development, to stabilize the livestock industry dependent upon the public range, and for other purposes". In the firm belief that action must no longer be delayed, both the Planning Committee and the Advisory and Legislative Committee endorsed the principles of the Bill as drawn on that date and urged its immediate enactment into law.

Through lack of legislation permitting regulation, the valuable natural resource represented by more than 176,000,000 acres of the remaining public domain lands, for most of which the most suitable surface use is grazing, has been already allowed seriously to deteriorate, and without regulation further progressive destruction will inevitably result in the reduction of large areas to eroded, barren wastes. Denudations of watersheds, furthermore, increases flood hazards and jeopardizes the water supply for irrigation, urban consumption, and for other uses. Such waste must not be permitted to continue.

The recommendations of the two National Land Use Committees and a summary of the considerations which led to their adoption, including consideration of the viewpoint which favors granting these lands to the States, are given in the Committees' Publication No. IV, "Conservation of the Grazing Resources of the Remaining Public Domain".

Amendments to the original measure were subsequently made in the 72d Congress, and repeated in House Bill No. 2835 of the 73d Congress (1st Session). These changes would leave to each State the power to accept or reject the application of Federal regulation of the use of the Federal public domain within the State. In the judgment of the Committee, this would make effective regulation impossible in practice, and would virtually nullify the beneficial principles outlined in other sections of the Bill. Accordingly, at its May meeting the Land-Use Committee through a press statement again called public attention to the necessity of enacting the principles of the measure in the original and unamended form.

Land Inventories and Land Classification

Another phase of the field upon which the Planning Committee can report definite progress is that of land classification. Under the auspices of its Technical Committee III on Land Inventories and Land Classification, classification, on a physical basis, of the lands of 18 States has already been tentatively completed, and is in progress in 7 others. The work of classification is carried on cooperatively by the Federal Bureau of Chemistry and Soils, the Division of Land Economics, Bureau of Agricultural Economics and the State Agricultural Colleges and Experiment Stations, and is done in sufficient detail so that a rating can be given to bodies of land as small as 40 acres. The plan contemplates eventual classification of the land areas of the entire United States according to their physical suitability for the principal agricultural crops, including pasture and forage, and forests.

The importance of land classification for wise utilization of our land resources needs no emphasis, for obviously it is essential first of all to know what the land is good for, and the determination of that is the essence of the classification work. Two types of classification are required: physical and economic. Physical classification, however, is basic and prerequisite to economic classification. Because of the relatively slow rate of change in physical conditions, a physical classification can be made with the expectation that it will be serviceable for a long time. On the other hand, because

of the ever changing character of economic conditions, an economic classification should be made as required for implementing programs of action in specific areas. Technical Advisory Committee No. I has already undertaken to outline principles and procedure in economic classification.

The term "classification" has sometimes been erroneously associated with the notion of an irrevocable, rigid, compulsory exclusion of designated lands from agricultural use. Classification, as such, is not thus interpreted by the Committee, but is merely an analysis and rating of land according to suitability and adaptability. Classification must be distinguished from control.

In classification on a physical basis the objective is the differentiation of the land of the United States into areas based on differences in the kinds of plants for which the natural conditions in each locality are most favorable, and differences in the success by which plants, favored by the locality, may be grown. Success refers both to quantity and quality of the product, and the plants concerned are those used extensively in agriculture, including native grass and forests. For the purpose of this classification, land is defined as "the sum total of the factors of the geographic environment in which plants grow". The relative productivity of land in a given locality is rated according to the capacity of that land for the production of the dominant and highly important agricultural crops, such as the grains, forage plants, fibers, fruits, vegetables and forests.

The standard of maximum productivity for any crop is taken as the productivity of that spot where a given plant or group of plants finds the most favorable conditions for production, and therefore produce the highest yield. This is determined by consideration of actual facts in production along with the conditions of the environment, especially the characteristics of the soil.

The work so far has been confined to areas covered by soil surveys. The rating in each case is based on knowledge of the success with which crop growing takes place in the locality, and also knowledge of the characteristics of the environment. For a small area this concerns the characteristics mainly of the relief, and of the soil. Those characteristics of the soil are given prime consideration in the rating which experience has shown to be of dominant value in plant growth, the result modified by the presence or absence of those characteristics known by experience to be present in soils which respond readily to good treatment, either cultivation, or the use of soil amendments. These characteristics are primarily those which bring about a good water-holding and water-delivering capacity to the soil, the presence of a good supply of plant food, those physical characteristics of the soil which include depth, texture, structure, friability, and temperature. The distribution of crops is correlated with the distribution of soil units or types within the area, the relationship thus established being one of a number of factors on which an interpretation of the agricultural significance of soil characteristics is based. The correlations are concerned primarily with texture, structure, character and succession of horizons in the soil profile,

reaction and the chemical composition of the soil including the supply of organic matter. By these, and other means, it becomes possible to determine what soil characteristics are highly significant and what are less so. This constitutes an attempt for the first time to consult the plant in determining the significance of the physical, chemical and biological characteristics of soils.

On the basis of the soil characteristics as obtained from the study of the soil map and report, the soils are grouped into productivity units or into groups in each of which the soils have approximately uniform inherent productive capacity. The groups are then arranged in the order of their inherent productivity as determined by the consideration of all the factors mentioned above. Each group is then rated by giving it an index figure designating its productivity for each of a series of crops. The crops selected are those that may be grown in the environment or those that are dominant.

The index figure for the productivity of a given land type (usually a soil type) for any crop expresses the relative productivity of this type of land compared with that type having in the United States the highest productivity for the crop concerned. The land type best adapted to the crop is given a rating of 10 and the other lands are rated in proportion from 10 down to 1.

The "natural" rating may be supplemented in certain cases by one expressing special response to the use of fertilizers, and special cultural treatment. Since the black soils generally must be rated on the basis of their natural productivity, the fundamental conditions of a comparative rating demand that all soils be rated on that basis. Since, however, the agriculture over a large part of the United States is carried on by a systematic use of manures, fertilizers, and lime, it has appeared desirable to give to the soils where such practices prevail a supplementary rating based on actual performance. Therefore, where fertilizers or other amendments are extensively employed such soils are given a double rating.

The data on which the rating is being made consists in general of all available geographic information. The most important data for details within any one small area are those contained in the reports of the Soil Survey. The work therefore in its essentials consists of an interpretation of the soil map of the United States. The county soil maps are modified by grouping or differentiating soil units as shown on the map in accordance with the interpretation of the relative productivity of the different soils. The acreages of each kind of land shown on such modified maps are summed up into a table, and along with the table of ratings in detail and the map, is supplemented by a written report discussing the bases on which classification was made, the range in the character of each important class of land, the relative results that may be expected on each of the given soils through the use of fertilizers or special treatments of whatever kind, and in addition any other matters that cannot be shown on the classification map. From the county maps thus constructed a state map is prepared showing the distribution of lands within certain limits of productive capacity.

The plan contemplates treating the whole United States in so far as it is possible. More than half of the most important agricultural States east of the Rocky Mountains has been covered by soil surveys. Fortunately for those States in which considerable soil survey work has been done, the unsurveyed areas are scattered among surveyed areas in such a way as to bring practically every unsurveyed area into contact on one or more sides with surveyed areas. Through these contacts and the distribution of different kinds of soils in these adjoining areas reliable general conclusions may be drawn regarding the distribution of soils of different kinds within the unsurveyed areas.

Publication of land classification maps and appropriate textual material is under consideration. A discussion explanatory of principles and procedure is now in preparation and will be combined with a discussion of the principles of economic classification.

Land-use Planning in the Tennessee River Basin

Land-use planning in the Tennessee River Basin formed an important subject of discussion by the Planning Committee during its meeting in Washington on May 1-4. The contemplated program obviously affords an unusual opportunity for land-use planning, including the diversion of submarginal agricultural lands to other uses, reforestation, and control of soil erosion and floods, and for improving the incomes of farmers through industrial decentralization, the development of local markets and the creation of opportunities for employment in industry. The results to be obtained from a well considered program of land-use planning, both rural and urban, will, in the opinion of the Committee, be fully as significant in the longer run as the more immediate benefits from unemployment relief, navigation, power and fertilizer production. These unusual planning opportunities led the Committee to consider and suggest broad policies related to planned land use in the Basin, which were published in Publication No. VII, "Land-use Planning in the Tennessee River Basin".

Reports that speculative exploitation of the benefits of the program threaten to prevent the full possibilities of the project from being realized led the Committee to issue a public warning through the press, and to urge that such tendencies should be checked by suitable regulation and control.

Refinancing of Distressed Irrigation, Drainage and Other Reclamation Districts

During the year the Planning Committee, on the basis of reports made by its Technical Advisory Committee X on Reclamation, Drainage and Irrigation Policies, made recommendations on two aspects of the land-use problem in this broad general field: (1) The refinancing of distressed irrigation, drainage, and other land reclamation projects; (2) principles of State legislation relating to the use of underground waters.

That the distress of the reclamation districts is becoming more and more acute and that remedial measures must be considered is clear. Many districts whose finances three years ago were considered sound are now facing the same distress that overtook less sound or less ably-managed enterprises early in the depression. In one State, for example, on July 1, 1932, 76 of the 95 active irrigation districts had outstanding bonds which represented a total principal amount of $95,000,000. Thirty-seven of these districts were then in default on either interest or principal obligations; the principal of these bonds totalled approximately $70,000,000. Since that date, more have defaulted, and still others are having great difficulty to remain solvent. Authentic figures of recent date are not at hand to indicate the circumstances of irrigation districts elsewhere, but the example cited is far from being unique. The condition of affairs in many drainage districts in Northern, Southern and Western States is likewise known to be serious, although the amount of the bonds in default has not recently been ascertained.

The principal type of Federal legislation on which proposals for relief have centered is that represented by H. R. 4650 (72d Congress, 1st Session). This type of measure, however, is viewed by the Planning Committee as inadequate and inappropriate at this time, and as introducing an influence which would tend to operate adversely to the objects of sound national land-use planning. The Committee, therefore, recommended adversely to this measure.

Negotiations between farmers and bondholders are in progress in many districts, and some settlements have already been made. The principal difficulties in the way of successful adjustment are those involving the ascertainment of present and prospective productive values of the farms. To be successful, readjustments of present oppressive financial burdens must be based primarily on the earning capacity of the land. The soils must be reexamined and new judgment must be passed upon their fertility; the irrigation and drainage works must be gone over and their need for repairs and improvement for the sake of economical service must be recognized; the whole status of indebtedness as represented by mortgages as well as bonds must be surveyed; marketing possibilities and crop adaptability must be sized up.

The Federal Government can and should assist in such ascertainments where they can not be reached by the farmers and their creditors alone. Certain branches of the Department of Agriculture and various agencies of the States have already rendered assistance along these lines, in the capacity of disinterested investigators. Their services should be made available to other districts. When necessary, such surveys should be supported by Federal and State funds.

This process of mutual adjustment through concilation and compromise, already under way, should in the judgment of the Planning Committee be aided and expedited. Furthermore, in any sort of Federal refinancing measure that

may in future be proposed, the type of disinterested examination and report outlined below would seem to be necessary in order that the case of each district may be considered on its own merits. Accordingly, the Committee further recommended as follows:

(1) That each State in which there are irrigation, drainage, flood control, or similar districts in financial difficulties create or designate by legislative or executive action a commission or tribunal to which either the districts or the bondholders may appeal for assistance in cases of actual or apprehended inability to meet financial obligations. This commission or tribunal should be authorized to aid either or both parties in such cases in finding how best to refinance or readjust existing obligations of indebtedness. This commission or tribunal should be authorized to enlist the services of such existing State agencies as may be able through their professional or expert personnel to furnish the commission or tribunal the essential facts or unbiased evidence concerning the agricultural, engineering, economic, or social conditions on the districts concerned that may be required for the purpose of arriving at a fair basis of refinancing or financial readjustment.

(2) That in each State acting favorably on this recommendation provision be made by legislation or by local communities or organizations to raise the funds necessary for the cost of such technical investigations as may be required by the commission or tribunal, these funds to be made available to the State agencies involved in such investigations. Further, these State agencies should be authorized to enlist the cooperation in their investigations of those Federal departments having professional or expert personnel particularly qualified to make such investigations.

(3) That the Congress authorize that in the interest of the public welfare the Departments of Agriculture, Interior, and Treasury may cooperate with the various States, upon request from an authorized State agency, in the technical investigations herein called for, and in case of such cooperation the Federal departments should be authorized to contribute to such cooperative investigation in personnel and other expenses not to exceed one-half the total cost of such investigations, as may be agreed upon between the cooperating agencies.

The National Advisory and Legislative Committee on Land Use approved in principle the type of Federal legislation recommended above.

Technical Advisory Committee X is continuing its consideration of the complex problem of reclamation in relation to land-use planning and national policy. Regional needs and conditions are important in arriving at a fair conclusion on this matter; consequently Technical Committee X plans to establish regional subcommittees for the next phase of its work.

Suggested Principles of State Legislation Relating to the Use of Underground Waters

Underground waters form a natural resource of vital importance in many areas, especially in the Western States. The demand made upon the available supplies leads to conflict and confusion, to ill-considered development and the unwise use of land, and to great individual and social losses.

Regulation through appropriate legislation of the use of these naturally restricted supplies of underground water would go far to eliminate these difficulties and would do much to promote the best use of our land resources. The longer such regulation is deferred, the more involved and difficult the problem becomes.

Adequate regulation of underground waters is clearly essential to wise land utilization. Accordingly, the Planning Committee has approved and adopted a set of suggested principles for State legislation on underground waters, based on a report prepared by its Technical Advisory Committee X on Reclamation, Drainage and Irrigation Policies. The problem at the present time appears to be one primarily for action by the States.

Both the Planning Committee and the Advisory and Legislative Committee, which also expressed its approval, commend to the affected States for their serious and early consideration the principles of legislation suggested. These principles, together with a brief discussion of underground water laws, are given in the Committee's Publication No. III.

The "Back to the Land Movement"

The consideration given by the Planning Committee to the "back to the land movement" has already been related in the statement issued by the Committee on October 1, 1932. 2/ A report on the subject, which dealt briefly with the problems and probable results of the movement and its bearing on land policies, was approved by both the Planning Committee and the Advisory and Legislative Committee. 3/ The Planning Committee and the Advisory and Legislative Committee recommended that the Secretary of Agriculture, in cooperation with other Federal agencies and with State agencies, be authorized to provide guidance, direction and protection to those unemployed seeking to

2/ Publication No. II

3/ Publication No. I - "Resolution with Reference to the Relationship of Urban Unemployment to Land Utilization and Settlement".

return to the land, and in such manner as to avoid placing undue burdens upon already heavily-burdened rural communities. These recommendations were subsequently embodied in Senate Joint Resolution 169 (72d Congress, 1st Session). This measure was passed by the Senate, but action was not taken by the House.

Both the Planning Committee and the Advisory and Legislative Committees have continued to urge the passage of Federal legislation of this character. The continued severity of the depression in industry and the growing drain upon urban relief budgets have made constructive legislation of this type increasingly imperative if disappointment and possible disaster to the unemployed are to be avoided and still further aggravation of the difficulties of established rural communities prevented; nor will extensive public works programs or direct settlement plans obviate the need for machinery of the character recommended.

Obviously, national and State policies regarding the "back to the land" movement and regarding land policy in general are intimately related to the outlook with respect to the extent, duration and character of urban unemployment. If, as many believe, urban unemployment is to be extensive and long-continued despite a revival of industry and commerce, because of technological advances which displace human labor, then policy with respect to provision of opportunities on the land will need to be of a radically different character than if present urban unemployment is only temporary. As a guide to the formulation of policy the Planning Committee, through its Technical Advisory Committee XI on Direction and Control of Land Settlement, has under way an inquiry into the unemployment prospect, with particular reference to so-called technological unemployment.

Two other inquiries have also been undertaken through Technical Advisory Committee No. XI: (1) a reconnaissance survey of the types of organized "back to the land" activities, both public and private, in operation or contemplated in the United States, with a view to ascertaining the nature of the various "plans" being tried or considered, and the extent and effectiveness of each; (2) further investigation of the possibilities of developing "part-time" farming, under which work in the factory or office is combined with work on a small farm within commuting distance of the work place.

Federal-State Relationships in Taxation

The intimate relation between taxation and land-use planning has already been dwelt upon in an earlier report. 4/ Taxation must be adjusted so that the tax levies upon land at least will permit and, if possible, promote the desired utilization. Generally speaking, this implies reduction in taxes upon land as imposed under the prevailing system of taxation. This in turn means reduction in public expenditures, or tax revision to get a material part of the revenue from sources other than property, or both.

4/ Publication No. II.

The search for other sources of revenue has already thrown the question of Federal-State relationships in taxation into sharp relief. The competition for revenues will undoubtedly be still further intensified in future.

The Planning Committee recognizes that Federal-State relationships in taxation present exceedingly complex questions upon which it is not in position to make specific recommendations, at least at this time. However, in the belief that a beginning should at once be made the Planning Committee, on the basis of a report by its Technical Advisory Committee No. VII, on Adjustment and Reorganization in taxation in Relation to Land Use, recommended as follows:

1. The central aim of the coordination of State and Federal taxation should be to achieve ultimately a revenue system for the country as a whole, in which local, State and Federal taxes should be coordinated into some logical scheme. This would recognize the essential economic unity of the country as a whole and should be consistent with the basic differences among National, State and local authorities from the standpoint of effective and economical administration of various taxes. The need of coordination on the basis of this principle is particularly evident now that the Federal Government and the States are seeking earnestly for new sources of revenue.

2. There should be created a national committee, or commission, preferably under the authority of Congress for study and recommendations upon the problem of State and Federal coordination of taxes, in accordance with the general principle just stated.

These recommendations were also approved and adopted by the Advisory and Legislative Committee. After their adoption it was learned that a resolution, H. J. Res. 280 (72d Congress, 1st Session), had been introduced which asked for the appointment by the President of a widely representative commission to study and outline sound tax systems for the guidance of Congress and the State legislatures. Congressman F. M. Davenport of New York, who introduced the measure, appeared before the Land Use Committees to explain his resolution. The Committee voted to approve the resolution, and to support it in every way possible.

Forests, Parks, Recreation and Wild-Life Preservation Areas

The continental United States contains 1,903,000,000 acres of land. Of this, approximately one-half is physically adapted to the production of harvested farm crops for food, clothing, etc. Progressive developments in agricultural technique hold out the promise that from this one-half of the

total land area, plus limited pasturage of parts of the other half, the needs of the prospective population of the United States for food, wearing apparel, export commodities, etc., can be met for an indefinite future period.

This primary and dominant fact raises sharply the question of the future economic and social destiny of the remaining half of the land area of the 48 States. It is not needed for farm-crop production. Our cultivated area needs contraction, not expansion, and attempts to use such lands for that purpose will entail expenditures of capital and human effort far disproportionate to the average returns obtainable. On the other hand, the abandonment of such lands, the cessation of all organized and systematic protection against deterioration and destruction, would set in motion a process of slow attrition which, over the years, would markedly impair one of the Nation's basic resources, its soil capital.

The fact that one-half of the land area of the 48 States is poorly adapted to and not needed for farm-crop production does not mean that it is lacking in potentialities for social and economic service. On the contrary it is rich in such potentialities, which readily can be realized by systematic determination of the kinds of economic or social service to which specific types of areas of land are best adapted, and by the gradual adjustment of the use of such lands, through voluntary private action or legislatively authorized public action, to the forms of service so determined.

It is evident, for example, that a balanced economy and sound program of industrial and social organization will require that adequate supplies of timber be permanently available to meet national needs, and shall be so distributed regionally as to maintain a proper balance between regional production and consumption. To this end, a large proportion of the available area should permanently be dedicated to forestry.

Another need of large dimensions is that of provision for the scientific, educational, and recreational requirements of a population steadily growing not only in numbers, but in cultural standards; a need made progressively acute and important by the increase in leisure time and the growing intensity of metropolitan existence. To satisfy these needs an adequate part of the territory not required to feed or clothe the Nation or to furnish products for export should be dedicated to public service as parks, monuments, recreational areas, playgrounds, etc.

As time goes on, the great social, scientific, educational, and economic potentialities of the wild-life resources of the Nation gain enlarged recognition. Their conservation, development, and augmentation are dictated by all considerations of public interest and welfare, and the dedication to that purpose of large areas of available lands through their permanent establishment as wild-life refuges or sanctuaries, with certain related areas for public shooting grounds, would be good public economy, productive of a high type and return of social and economic service.

Beyond or exclusive of the categories above described there are types or areas of lands which, in the absence of systematic and continuing control would negatively influence public welfare and social progress by destructively affecting social or economic values, functions, or services. An outstanding example is afforded by areas on the watersheds of navigable streams where accelerated erosion is affecting the normal regimen of the streams, gradually reducing the storage value of reservoirs upon which irrigation and hydro-electric power projects are wholly dependent for their existence, obstructing channels of navigation, choking or filling canals and ditches and depositing blankets of infertile material upon fertile and productive lands. The economic existence of many communities, the preservation of the transportation values of many streams, the protection of vast sums of invested capital, all demand the subordination and control of forms of use destructive of major economic values or social services, which can best be accomplished by specific dedication of such land types or areas to specific objectives of public safety and national security.

Under the haphazard conditions of land ownership, use, and management hitherto and now prevailing, these objectives are not susceptible of immediate or early attainment. Such adjustments will not be accomplished by legislative or administrative dictum or arbitrary public action, but rather by the slower processes of public understanding. Programs necessarily must initially be general and broad in character, serving merely as points of departure from which, by processes of trial and error and by adjustment and refinement in the light of subsequent experience, ultimately acceptable programs of land use may be developed and fully applied.

The scope of the various categories of land, the primary objectives of their dedication and the types or forms of social and economic service toward which their management should be directed have already been outlined in Publication No. VI. The working out of a program, however, obviously requires further answer to specific questions. Accordingly, Technical Advisory Committee No. V, on Forests, Parks, Recreation and Wild-Life Preservation Areas, is now engaged upon that difficult and far-reaching task, in which among other items it has undertaken to ascertain the following:

(1) The necessity for the proposed forms of social and economic service and the specific ways in which they will contribute to economic security and social progress; (2) the probable future requirements per capita of the population of the United States, in its probable ultimate numbers, for each type of service other than those primarily of a protective nature such as watershed protection; (3) the translation of these requirements into terms of land area; (4) the proper regional distribution of such land areas so that the needs of the prospective population for each type of service can most fully be met without dedication to the specific service of areas disproportionate to total needs; (5) the practical methods by which the areas so defined can be made available; (6) the probable effect of so dedicating the proposed areas upon: (a) the institutions of local government, (b) the existing or prospective industrial structure and economic institutions, (c) the present distribution of population; (7) the principles or considerations which should govern the division of responsibility for action and administration between (a) private enterprise, with or without public regulation, (b) municipalities and other minor civil divisions whose citizens require some or all of the

various types of service, (c) the counties or other comparable units of local government, (d) the States, and (e) the Federal Government; (2) the approximate program by States or interstate regions, in terms of area, cost, etc.

Credit in Relation to Land Utilization

Technical Advisory Committee No. VI, Agricultural Credit, has devoted attention to the relation of the extension of credit to the use made of the land. Special attention was given to Federal Crop Production Loans. The investigations made, though not exhaustive, clearly indicated that large areas of the poorest lands were being kept in agriculture through the operations of these loans and were it not for these funds, farmers would voluntarily relinquish the land because they definitely could not expect to make a living thereon. The inconsistency of one arm of the Federal Government paying out money to thus maintain agricultural production, and another arm paying out money to curtail production, is apparent. But more serious still is the fact that continued attempts to cultivate these lands only destroy further the possibility of their restoration to the uses for which they are by nature best fitted, principally range grazing or forest.

Relation of Rural and Urban Planning

For more than a decade the scope of city planning has tended more and more to consider the problems of the region surrounding the urban center or centers. In considering the problems of the region, city and regional planners have necessarily had to take into account the present and prospective use of the land in the rural territory. The Land-Use Planning Committee, on the other hand, in its studies realizes the necessity of considering urban influences and the broader field of the development of a region as a whole. This growing realization on the part of both groups that their fields of interest have many points in common led to a meeting of representatives of each in Washington to discuss these mutual relations, to consider programs and methods, and to define the objectives of land planning. As a result of these mutual discussions, the representatives concluded that the field of land planning as it affects any region is a unit, and there can be no line of demarcation between regional planning as viewed by those who have approached it from the field of city planning or by those who have approached it from the field of rural land-use planning. The economic and social considerations involved make any such division of the field both impracticable and undesirable. Cooperative effort between the workers in the two fields is, therefore, essential. The need for developing programs of regional land planning was stressed and also the need for Federal and State agencies to develop and to coordinate the various segments of land planning activities.

The American City Planning Institute was represented by Alfred Bettman, Cincinnati, Ohio, President of the National Conference on City Planning; Charles Eliot, 2nd, Washington, D. C., Director of Planning of the National Capital Parks and Planning Commission; John Nolen, Cambridge, Massachusetts,

President of the International Congress of Housing and Town Planning; Robert Whitten, New York, N. Y., planning consultant and former President of the American City Planning Institute; and Jacob L. Crane, Jr., of Chicago, Illinois, planning consultant and Vice President of the American City Planning Institute, chairman. Dr. H. G. Knight, Chief, Bureau of Chemistry and Soils, Dr. A. R. Mann, Provost, Cornell University, Major R. Y. Stuart, Chief, Forest Service, and Dr. L. C. Gray, in charge, Division of Land Economics, Bureau of Agricultural Economics, chairman, formed the subcommittee of the National Land-Use Planning Committee.

Cooperation with State Planning Projects

During the year the Planning Committee, on invitation of State agencies, actively associated itself with two States, Minnesota and Georgia, in the conduct of land-use planning projects therein. Detailed local planning, the Committee recognizes, must in the nature of the case largely be carried out through State action. The Planning Committee, however, can be of definite assistance to the States; first, by way of aiding in the coordination of State and Federal land policies, an important element in the problem; second, by way of furthering coordination of the research efforts of the various agencies whose services are essential; and third, by enlisting tangible cooperation in the use of personnel and funds from the various Federal, and in some cases, State, agencies whose services are needed. The Planning Committee places particular emphasis on the second point, for it is firmly of the belief that effective action can never be achieved if the research needed on such a many sided problem as land policy proceeds along separated lines uncoordinated as to basic objective. A program of land-use planning necessarily must depend upon the synthesis of the methodologies and informational resources of various fields which in their development have become highly specialized and segmentized.

National Cooperative Research Program in Land Utilization

A step toward still further cooperation with the States, the development of a nation-wide land-use program, was taken when the Experiment Station Section of the National Association of Land-Grant Colleges and Experiment Stations, at its annual meeting in Washington in November, 1932, voted to develop a national cooperative research program in land utilization. Under this program, it is proposed, a concerted attack will be made by the various States through their Agricultural Experiment Stations, with the collaboration of the Department of Agriculture and other Federal Agencies, on the land-use problems of the respective States. The National Land-Use Planning Committee was asked to outline such a national cooperative research program. This has been done.

In the development of the program the National Land-Use Planning Committee will participate as a cooperating agency, with the function of enlisting the collaboration of Federal agencies, promoting the integration of

Federal and State efforts, and encouraging the unification of aims and policies and the uniformity of method necessary to make the project contribute results of nation-wide significance and advantage. The Committee will also enlist the collaboration of two or more States for regional projects lying within the boundaries of more than one State.

Importance of Federal-State Collaboration in Land-Use Planning and Research

The problems of land utilization are of local, State, and national concern. Certain types of adjustment affecting or related to land use largely depend upon State action, such as changes in taxation, incorporation and regulation of reclamation districts, regulation of land sales and land settlement, zoning laws, and legislation with respect to land tenure and water rights. Certain activities have come to be exercised by both the Federal Government and the State government such as forest protection, forest ownership, the supply of seedlings, the reclamation of land, the protection of watersheds and regulation of stream flow, and establishment of public parks and game refuges. The Federal Government may profoundly influence the local pattern of land utilization through its agricultural, forest, and water conservation policies. Both the Federal Government and the States are in possession of important information required for land use planning, and both maintain research services that should contribute their information and experience. Federal collaboration is essentially desirable in the interest of the unification of aim and standardization of method that are essential if the aggregate efforts of both State and Federal agencies are to be most fruitful. It is important not only to effect a coordination of policy but also to promote sufficient uniformity in terminology, classification and methodology to make possible aggregating and comparing the results of various local investigations.

Position of the Planning Committee

The Planning Committee, it should be noted, is a purely voluntary organization without statutory status and without funds or staff of its own. The continued adverse agricultural situation by 1931 had indisputably emphasized the fact that no program of alleviating the agricultural situation would for long be successful without fundamental revision of our outworn and obsolete policies and attitudes toward land use. An immediate beginning on this too-long neglected problem could no longer be postponed. The Nation's activities with respect to lands were being handled by a multiplicity of separate agencies each carrying on activities for some special segment of the field. No single agency responsible for coordinating these separated activities and for promoting consistency in policies existed, nor did establishment of another new and separate agency to undertake that function seem feasible or desirable at the time. Rather, it seemed logical that an effective beginning on the many sided problem of land policy could be made by bringing together the various existing agencies identified with land use and policy and through the common counsel of such a voluntary committee, formulate desirable

lines of action on the basis of already existing information, coordinate the work of existing agencies, and stimulate them to undertaking new lines of endeavor. The functions of the Committee, in other words, as established, were to operate as a central board of policy and coordination, working through existing agencies.

While under the conditions the activities which the Committee can carry on necessarily have their limits, nevertheless the Committee feels that a gratifying beginning on the whole land-use problem has been made. For this encouraging progress the Committee is deeply indebted to the cooperation of its participating agencies, to the membership of the National Advisory and Legislative Committee on Land Use, and to members of the 12 Technical Advisory Committees, who have given generously of their time and thought to the many considerations which must carefully be weighed in the determination of sound policies. The technical advisory committee men are experts in their fields who have been drawn from all parts of the country. They all serve voluntarily and without compensation, as do the members of the Planning Committee.

In the nature of the case correction of the defects in our laws, practices and attitudes toward land use, by now strongly embedded through years of neglect, must be a gradual process, and the work of the Committee must be viewed as a long-time undertaking. It is appropriate to remark, however, that now that the ground has been cleared and a substantial foundation laid for future work, progress toward the establishment of a real land policy and program in the United States would be greatly facilitated and expedited if a full time secretarial staff were now provided. Such a staff serving the Committee need not necessarily be large for effective work to be done.

Growth of Interest in Land Use Planning

Particularly significant has been the great and growing interest manifested throughout the country in land-use planning. The entrance of the Agricultural Experiment Stations into the field in a concerted way, through a national cooperative research program in land utilization, has already been mentioned. State land-use conferences have recently been held or are scheduled soon to be held in at least 5 States. Official or semi-official land-use committees have been established in not less than 7 States, and the appointment of such has been recommended in several others. Land-use planning projects of substantial scope are known to be actively under way in 5 States; a State-wide conservation plan for at least one State has been drawn up; whereas in others, notably in New York, State programs involving the better use of land resources have gone forward with vigor. During the past year special attention to land use was given in discussions, reports or resolutions of the American Farm Economic Association, the Association for the Advancement of Science, the Association of Land

Grant Colleges and Universities, the American Soil Survey Association, and the American Society of Agronomy; and special sessions will be devoted to the subject in the forthcoming August meetings of the American Country Life Association. It seems clear that the public consciousness is being awakened to the need for a more rational and orderly utilization of our land resources, and that research and administrative agencies in position to make that public opinion effective in action have laid a basis upon which the establishment of a consistent and constructive land policy can now go forward with vigor and assurance.

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National Land-use Planning Committee.

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NATIONAL LAND-USE PLANNING COMMITTEE
AND
NATIONAL ADVISORY AND LEGISLATIVE
COMMITTEE ON LAND USE

WASHINGTON, D.C. ✦ APRIL 1933

THE PROBLEMS OF "SUBMARGINAL" AREAS, AND DESIRABLE ADJUSTMENTS WITH PARTICULAR REFERENCE TO PUBLIC ACQUISITION OF LAND

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Publications previously issued by the National Land-Use Planning Committee and the National Advisory and Legislative Committee on Land Use:

No. 1. Resolution with Reference to the Relationship of Urban Unemployment to Land Utilization and Settlement. (Mimeographed.)
No. 2. Organization and Objectives of the National Land-Use Planning Committee and the National Advisory and Legislative Committee on Land Use. (Mimeographed.)
No. 3. Suggested Principles of State Legislation Relating to the Use of Underground Waters. (Mimeographed.)
No. 4. Conservation of the Grazing Resources of the Remaining Public Domain. (Mimeographed.)
No. 5. First Annual Report of the National Land-Use Planning Committee. (Mimeographed.)

Copies of these publications may be obtained from the Executive Secretary, National Land-Use Planning Committee, United States Department of Agriculture, Washington, D.C.

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COMMITTEES

The National Land-Use Planning Committee and the National Advisory and Legislative Committee on Land Use were established as a result of recommendations formulated by the National Conference on Land Utilization held at Chicago in November 1931. The official and non-official organizations represented on the two committees were designated by the conference.

The creation of the committees was the outgrowth of a long recognized need for promoting a unification of objectives and a coordination of policies and activities among the various Federal and State agencies dealing with land problems.

The membership of the two committees is as follows:

NATIONAL LAND-USE PLANNING COMMITTEE

F. D. Farrell, President, Kansas State College——*Chairman.*
Nils A. Olsen, Chief, Bureau of Agricultural Economics, United States Department of Agriculture——*Vice Chairman.*
L. C. Gray, Principal Economist in Charge, Division of Land Economics, Bureau of Agricultural Economics, United States Department of Agriculture——*Executive Secretary.*
H. G. Knight, Chief, Bureau of Chemistry and Soils, United States Department of Agriculture.
S. H. McCrory, Chief, Bureau of Agricultural Engineering, United States Department of Agriculture.
C. W. Warburton, Director of Extension Work, United States Department of Agriculture.
R. Y. Stuart, Chief of the Forest Service, United States Department of Agriculture.
Sam H. Thompson, member, Federal Farm Board.
John H. Guill, member, Federal Farm Loan Board.
Elwood Mead, Commissioner, Bureau of Reclamation, United States Department of the Interior.
W. C. Mendenhall, Director, Geological Survey, United States Department of the Interior.
Charles C. Moore, Commissioner, General Land Office, United States Department of the Interior.
A. R. Mann, Provost, Cornell University.
H. A. Morgan, President, University of Tennessee.
H. L. Shantz, President, University of Arizona.
C. B. Hutchison, Dean, College of Agriculture, University of California.

NATIONAL ADVISORY AND LEGISLATIVE COMMITTEE ON LAND USE

Cully A. Cobb, Vice President and Editor, Progressive Farmer and Southern Ruralist——*Chairman.*
L. J. Taber, Master, The National Grange——*Executive secretary.*
American Farm Bureau Federation:
Charles E. Hearst, Vice-President, American Farm Bureau Federation.
C. R. White, President, New York State Farm Bureau Federation.
R. W. Blackburn, President, California Farm Bureau Federation.
Earl C. Smith, President, Illinois Agricultural Association.
American Forestry Association:
Henry S. Graves, Dean, School of Forestry, Yale University.

American National Livestock Association:
F. E. Mollin, Secretary, American National Livestock Association.
American Railway Development Association:
Ralph W. Reynolds, Commissioner of Agricultural Development and Colonization, C., M., St. P. & P. R.R.
American Society of Agricultural Engineers:
L. J. Fletcher, Caterpillar Tractor Co.
Association of American Agricultural Editors:
Cully A. Cobb, Vice President and Editor, Progressive Farmer and Southern Ruralist.
Dan A. Wallace, Directing Editor, The Farmer.
James M. Kirkham, Assistant General Manager, The Deseret News.
Chamber of Commerce of the United States:
J. S. Crutchfield, President, American Fruit Growers', Inc.
Farmers' Educational and Cooperative Union of America:
John A. Simpson, President, Farmers' Educational and Cooperative Union of America.
E. E. Kennedy, Secretary, Farmers' Educational and Cooperative Union of America.
H. G. Keeney, President, Nebraska Farmers' Union.
Glenn Miller, President, Iowa Farmers' Union.
National Association of Commissioners and Secretaries of Agriculture:
Arthur W. Gilbert, Secretary, National Association of Commissioners and Secretaries of Agriculture.
National Cooperative Council:
C. O. Moser, President, National Cooperative Council.
N. P. Hull, President, Michigan Milk Producers' Association.
Quentin P. Reynolds, General Manager, Eastern States Farmers' Exchange.
S. D. Sanders, President and General Manager, Washington Cooperative Egg and Poultry Association.
The National Grange:
L. J. Taber, Master, The National Grange.
E. A. Eckert, Secretary, Executive Committee, The National Grange.
Albert S. Goss, Master, The Washington State Grange.
Fred J. Freestone, Master, The New York State Grange.
National Wool Growers' Association:
Fred R. Marshall, Secretary, National Wool Growers' Association.

THE PROBLEMS OF "SUBMARGINAL" AREAS AND DESIRABLE ADJUSTMENTS WITH PARTICULAR REFERENCE TO PUBLIC ACQUISITION OF LAND

INTRODUCTION

Since its organization in the spring of 1932 the National Land-Use Planning Committee has been giving considerable attention to the problems of those areas that are not clearly adapted to use for farming, generally spoken of as "marginal" or "submarginal."

The committee recognizes that it is frequently difficult to precisely define a land-use margin that will differentiate areas submarginal for farming from areas that are supermarginal. In many regions lands above and below the margin are intermingled. A program of land utilization for such regions must deal with the region as a whole since the adjustments made for the submarginal lands affect more or less the economic position of the lands adapted to farming.

The present report, therefore, may be said to apply to areas where the major use of the land (i.e. farming, forestry, extensive grazing, parks, or other uses) needs to be determined, particularly when the uncertainty as to major use is associated with significant problems of economic and social adjustment. The principal regions not included (if areas of considerable extent be considered) are regions of established and unquestionable agricultural use such as much of the Corn Belt, parts of the Cotton Belt, the eastern margin of the Wheat Belt in the Great Plains, extensive areas of forest lands located mainly in mountain regions, and areas in the Great Plains and Intermountain territory suitable only for grazing. The problems covered by the present report occur in virtually all other parts of the country and even in portions of the regions mentioned.

When the committee first assumed the task of national land-use planning, it recognized that an initial prerequisite consisted of a birdseye view of the problem, a definition of terms, a formulation of objectives, and a development of the general principles that should give direction to a sound program of land use. The present report is intended to supply this need so far as concerns so-called submarginal areas. However, while outlining the problem of "submarginal" areas in broad fashion, the present report deals in considerable detail with only one major segment of policy, namely, public acquisition. Subsequent reports will be devoted to other segments.

While the present statement represents but a stage in the committee's progress toward the development of a comprehensive program, it appears appropriate to make public these broad conclusions in order that they may afford a basis of general discussion. This report as a whole is based on a report prepared by its Technical

Advisory Committee on Submarginal Areas in collaboration with the Technical Advisory Committee on Forests, Parks, Recreation, and Wild Life Preservation Areas.[1]

CONDITIONS IN PROBLEM AREAS

Problems of "submarginal" areas largely grow out of the following conditions more or less prevalent in such areas:

1. The decay of prevailing systems of farming where farming formerly appeared well established. This decay is a result of changes in conditions of competition that have affected adversely the comparative advantage of particular areas; changes in natural conditions, such as depletion of soil fertility, soil erosion, uncontrollable insect pests, and long periods of deficient rainfall; modifications in standards of living and in alternative opportunities of the farm population; and depletion of farm woodlots.

2. The destruction of the forest without adequate provisions for replacement, the consequent local and national instability of the timber industry and dependent industries, and the resulting geographic maldistribution of the supply of timber.

3. A sparse distribution of population, frequently owing in part to, or aggravated by, the decline of farming and mining, disappearance of the forests, or the decay of local industries, and resulting in unduly high costs of providing local public services.

4. In the West and South especially, the prevalence of tenure units of uneconomic size, owing largely in the former section to influence of national land policies and in the latter to the decline of the plantation system.

5. Ill-balanced condition of tax systems, which discourages the effective use of the land and in turn is attributable in part to a decline in tax-bearing ability owing to maladjustments in land use.

6. Extensive tax delinquency which cannot be dealt with by the traditional method of resale to private individuals, further aggravated by the consequent increased share of the tax burden imposed on the remainder of the tax roll.

7. Types of credit that have served to encourage the continued occupancy of areas ill adapted to agricultural use or that have been lacking in suitable provisions for facilitating the changes in ownership requisite for effective land utilization.

8. Because of declining population, disturbance of the normal relationship between community institutions and dependent populations, and disturbance of associated fiscal arrangements.

The various conditions and tendencies mentioned react on one another. The decay of farming, for instance, is intensified by disadvantages growing out of the passing of timber resources and by the special burdens imposed by sparseness of population or by a land tenure ill adapted to present economic requirements.

DESIRABLE TYPES OF ADJUSTMENTS

Local support for the development of land-use adjustment programs will most likely be found, no doubt, in those areas con-

[1] The membership of the technical committees will be found at the end of the report.

fronted with extensive tax delinquency or serious dislocation in fiscal and institutional arrangements resulting largely from changes in or maladjustments in land use. However, there are serious problems in submarginal areas even when little tax delinquency has developed. Such delinquency may be comparatively unimportant because State aid relieves the local tax burden materially or because the population has been content with a low and comparatively inexpensive standard of public services, or finally because administrative practices tolerate the nonpayment of taxes or settlement of back taxes on easy terms.

Among the desirable adjustments in submarginal areas the following may be mentioned:

1. Readjust the tax burden and methods of taxation so far as possible to conform to the uses for which the land is adapted and to the tax-bearing ability of each class of land and type of use, in order to remove unnecessary penalties on the constructive use of land by private enterprise. Reasonable concessions by the public, such as reduced or modified tax burdens, provisions for fire protection, and other services may make possible the retention and utilization of certain lands in private ownership that would otherwise revert to public ownership. Nevertheless, such concessions will be futile from the standpoint of public welfare unless private agencies will, in return for these concessions, so use their lands as to promote the general welfare.

2. In some areas the submarginality of farming is owing not primarily to the natural disadvantages of the land itself but rather to the unduly small size of existing farms or other disadvantages in farm organization. Continued private ownership and utilization may be made possible by modifications in farm organization. An adequate program would include ascertaining what changes in farm ownership and organization would make possible the continued cultivation of such areas, and facilitating these changes by a program of education and by such credit arrangements as would permit the necessary modifications in systems of farming.

3. Likewise, continued private utilization of forest land may be furthered by encouraging a better type of forest and wood-lot management on areas found to be adapted to private utilization. In some areas it may be possible to consolidate scattered tracts or farm wood lots for purposes of cooperative management, cutting, hauling, and marketing. Such cooperation, if made effective, would go far toward insuring better methods of management and more satisfactory results, particularly for farm wood lots and other small holdings of timberland.

4. For sparsely occupied areas where costs of local services are greater than the value of occupied tracts, work out a program of regrouping the population in accordance with the adaptability of various types of land for particular uses, and with a view to effecting economy in the provision of public services and utilities. It would not be proposed to compel people to move to suitable localities. Where they are disposed to move they should be encouraged and aided. In many cases such a regrouping may have to be effected by public acquisition of some or all of the occupied holdings through exchange or purchase, justified by the economies effected in local government

as well as by other considerations. There are some areas of submarginal land, however, not yet ripe for a program of regrouping.

5. After sparsely settled areas have been thus evacuated, or perhaps in some cases even before evacuation, it would be important to take steps to prevent resettlement. Insofar as the evacuation is effected by public acquisition, the public is in a position to prevent resettlement, but it may be desirable also to supplement this measure of control by zoning regulations to prevent the settlement of adjacent privately owned areas not hitherto occupied and not well adapted to maintaining a reasonably dense population.

6. Discontinue attempts to resell tax-delinquent lands better adapted to public than to private utilization, and restrict such resales in any case to areas where they will not entail an undue burden for public services. Consolidate areas acquired by tax delinquency into units suitable for administration. Acquire by purchase or exchange such additional areas as are especially adapted to fulfill the objectives in public ownership hereafter outlined.

7. Provide an adequate program of protection both for private and for public lands and determine a sound program of use for both public and private lands—for forests, recreation, grazing, wild life, or such combinations of these uses as may seem practicable.

8. Revise the institutional organization of the community, planning the location of schools, roads, and other utilities so as to conform to the general program of land utilization.

9. Effect such a regrouping of units of local government and redistribution of governmental functions as may be desirable, by reason of changes in land utilization and in the distribution of population, with a view to achieving greater economy and efficiency.

In this and subsequent reports these suggestions will be considered in greater detail.

LAND CLASSIFICATION

Land classification is a necessary basis for most of the economic and social adjustments in submarginal areas that have been mentioned. There is much vagueness, however, as to the procedure and machinery necessary for land classification.

At the outset it will be found helpful to distinguish a physical classification from an economic classification. A large amount of technical work is now under way for the purpose of classifying land from one or another physical standpoint, such as soil surveys, topographic surveys, the definition of climatic zones, and various types of ecological classification. Such classifications are devoted to physical phases of land character, without reference to transitory economic and social conditions affecting land use. Sometimes various types of physical classification are combined in a land inventory. Insofar as they relate to physical conditions these surveys and classifications are of permanent value. In part they may be predicated on some transitory elements such as stand and condition of timber, location of cultivated areas, and farmsteads. The transitory elements employed in physical classification, however, are relatively permanent by comparison with an economic classification.

In line with the foregoing comments, it has been agreed that a physical classification will be most helpful if it is related not to a single character phase significant for the growth of plants (in-

cluding trees), such as soil, topography, rainfall, temperature, etc. but to such a complex of these various phases as may constitute a land type.[2] Such a classification will not constitute an economic judgment or classification as to use, though it will constitute an important basis of such judgments.

The Forest Service has been engaged since its inception in classifying lands within national forests. For many years the Geological Survey has been classifying the other federally owned lands with respect to their adaptability to agriculture and grazing, a task that is about one-half completed. The National Land-Use Planning Committee has arranged for a physical classification applicable only to surface uses of rural lands of the United States, which is being undertaken by the United States Bureau of Chemistry and Soils in cooperation with State experiment stations.[3] The effort will be made to grade each of the different classes of land according to the capacity and adaptability for those principal uses for which the land appears most likely to be employed, as measured by such criteria as yields, carrying capacity for pasture animals, rate of growth of timber, susceptibility to erosion or soil exhaustion, etc. For some areas the classification and grading will necessarily be rough and tentative because of lack of adequate data. Nevertheless, this project will provide a means of estimating statistically the area physically adapted to different uses, as well as provide an indispensable basis for the economic classification and economic planning hereafter discussed.

Undoubtedly for certain areas adequate data are lacking on acre yields of crops or carrying capacity of pasture to make possible an effective rating even of the physical productive capacity of the land, much less sound economic judgments as to its proper utilization. It is important that systematic steps be taken to provide the needed data. Those who undertake the physical or economic classification of land need reliable data for several years on yields and carrying capacity of various land types—especially those difficult to classify economically—under the broad average of conditions of use prevailing on farms.

The object of economic classification of land is to indicate what use of the land is economically most desirable under existing or reasonably prospective international, national, and local requirements and demand for various private and public purposes.

Where the emphasis in economic land classification is mainly in determining where agricultural use of the land is justified from the standpoint of private economy, the classification is associated with the concept of marginal land, and its correlatives submarginal and supermarginal. The marginal concept may be, but is not commonly, extended to any other specific use under a profit-seeking economy. (The term "marginal" is frequently incorrectly employed as a synonym of "submarginal.")

Marginal land may be defined in general terms as land where the agricultural output just balances input, including a proper allowance

[2] The term "land" is used to mean "the sum total of the factors of the geographic environment in which plants grow."

[3] Plans for this project were initially outlined by Technical Committee No. III, of which Dr. C. F. Marbut is chairman.

for depreciation and interest on capital other than land and for the labor of the operator and his family. This comparatively simple concept, however, requires numerous further refinements and involves numerous difficulties in definition and in application, some of which are as follows:

1. Marginality must be expressed with reference to a specific use of the land. Land that is submarginal for one use may be supermarginal for another use.

2. It is obvious, moreover, that one must have in mind a period of time. It has never been proposed to judge the marginality of a particular class of land for agriculture by the results of a single year. If a long period of years were the basis of judgment, land which is supermarginal on the average might yield subnormal returns for a sufficient number of consecutive years to occasion serious difficulties to the operators. The time element is also significant in determining whether the interest and depreciation on fixed capital are to be considered in deciding whether the land shall continue to be farmed.

3. The economic adaptability of land must be judged in terms of the degree of efficiency in use that may be expected of most of the people who will occupy and employ it, not in terms of the exceptionally efficient nor the extremely inefficient.

4. Prospective prices and costs, as well as technological changes, are necessary considerations in economic land classification. Economic forecasting is difficult and uncertain, but it is necessary in most economic judgments, private or public, made as a basis for a program of action.

Submarginal lands often are so intermingled with better grade lands, especially in areas of broken topography, that a given farm unit may contain land very inferior for crops but of special value for woodlots, pasture, or other uses. Under such conditions a judgment as to marginality normally must be applied to the farm unit and, in some instances, adjustments in farm boundaries may make the difference between submarginal and supermarginal classification of an individual unit.

Marginality for private uses must be formulated in the light of possible readjustments in the economic environment, such as modifications in tax burden, improvements in production, transport, and marketing facilities, etc., that may exert a very real influence in making possible the profitable utilization of land for a given purpose.

In many parts of the United States there are farm families who disregard the balance between input and output and occupy land where output is normally less than input when both are valued in commercial terms. Such lands would have to be regarded as submarginal from a commercial standpoint, but in many cases lack of experience or resources precludes moving to another environment or engaging in other occupations. Included in this category are mountaineers and residents of isolated communities who follow a traditional mode of life that may be submarginal when compared with the standard of living prevailing in areas of commercial agriculture; together with part-time farmers and families relying on other supplementary incomes including people of advanced age who are supported by their children. In this connection the prevalence of unemployment and the possibility that technological unemployment may continue for some time cannot be ignored.

The above points illustrate the fact that the commercial distinction between submarginal and supermarginal land—a concept formulated to define what is economically sound from the standpoint of private enterprise motivated essentially by the objective of profit-making—must be supplemented by other considerations when viewed from the standpoint of public interest and policy with respect to land use.

The economic adaptability of land to particular forms of use, or what may be called economic land classification, therefore, will consist largely of the formulation of economic programs for particular areas—that is, economic planning. It will be oriented from the broad standpoint of public policy. In view of the constant fluctuation of the basic economic conditions that determine the form of land use, it is obvious that economic classification cannot be made once for all. On the contrary, it must be elastic and subject to modification as conditions change. It should be undertaken mainly as a vehicle for the determination and application of land-use policies. The procedure and degree of intensity will depend largely on the objectives contemplated at the time the classification or land-use program is carried out.

PUBLIC ACQUISITION OF LAND

As indicated above, one of the most important methods of dealing with the problems of submarginal areas is public acquisition of land, or the retention of land that is reverting to public ownership through tax delinquency.

There is no phase of land utilization concerning which there is greater lack of definiteness than the question of the justifiable objectives and proper scope of public ownership, and the proper spheres of the various agencies of government in the acquisition or retention of land. The questions involved are numerous and complex, and an effort must be made to clarify them if we are to make progress in the development of a national land policy.

It is not a sound principle for the public to purchase land solely because private owners find it unprofitable to retain it. Its purchase should be justified by definite and sufficient public advantages. As for lands reverting to public ownership through tax delinquency however, it may be found necessary and desirable for the public to retain ownership even though the advantage to the public would not have been such as to justify purchasing it.

The principle just stated—purchase by the public only when there are definite and sufficient public advantages—may helpfully be applied to the numerous proposals for the public acquisition of submarginal farms. As a long-run program the acquisition or retention of submarginal farms may be advantageous where such acquisition results in the regrouping of population that will make possible economies in local government, while promoting more favorable relationship between supply and demand of farm products, removing the opportunity for exploitative resale of such farms to misguided purchasers, and retarding the development of continuance of "slum" conditions in these areas. However, in such an undertaking one should not lose sight of certain important considerations. For reasons already mentioned, many submarginal farms should con-

tinue to be occupied by the existing holders until more adequate means of earning a livelihood can be provided. The rapid wholesale purchase of such farms might seriously dislocate local fiscal and institutional arrangements by the removal of such lands from the tax roll. Frequently the purchase of submarginal farms is an expensive method of acquiring land for forests, because of the small size of the units and their sporadic location.

I. IMPORTANT ADMINISTRATIVE CATEGORIES FOR WHICH LAND IS RESERVED OR ACQUIRED BY PUBLIC AGENCIES

The distinctions between the several major uses of publicly owned land are at present extremely vague. The following points are submitted with a view to greater clarification:

1. The concept of national parks was formulated by Secretary of the Interior Lane in 1918, viz, "Scenery of supreme and distinct quality, or some natural feature so extraordinary or unique as to be of national interest or importance." This definition has hitherto provided the basis for the establishment and administration of national parks.

2. The term "national monuments" has been applied to areas characterized by prehistoric, historic, or scientific features "so extraordinary as to be of national interest or importance."

3. The term "State park" should be restricted to areas selected primarily because of scenic characteristics of better than average quality.

4. Small areas reserved or acquired primarily because of high prehistoric, historic, or scientific importance and possessing no outstanding scenic value should be distinguished from State parks by some different designation. The term "monument" is perhaps applicable for want of any other more aptly descriptive of this type of public holding. Areas designated as State parks or monuments should be sufficiently distinctive to give them at least Statewide interest and appeal. Unfortunately, at present this principle is frequently violated, and in many cases the distinction between public parks, public forests, and recreational or public shooting grounds, is not maintained.

5. Certain areas in which the flora has continued largely in a virgin state have been set aside in order that their primitive character might be maintained for scientific study, or for inspirational and recreational purposes. These have been designated "wilderness or primitive areas." Other areas, designated as "natural areas," have been established in the effort to preserve the original biological complex by protecting both flora and fauna. Both wilderness and natural areas may be merely reservations for special protection and use of virgin areas within national parks, national or State forests, or other units of public land administration.

6. In the interest of clarity the term "forest" when applied to public holding should be restricted to those areas which in the main support tree growth and where the functions of timber production and watershed protection are not subordinate to other social and economic objectives. So far as consistent with the major purposes, forests should be so administered as to permit utilization of forage resources, afford a habitat for game and fish, and provide for recre-

ation and other public benefits. Some of the areas included within national forests, especially in the West, have little significance as timber producing areas. They were reserved primarily for watershed protection through range control.

7. There are other areas of great importance as watersheds which do not in the main support tree growth and are not properly classifiable as forests. These areas comprise the major drainages of some of the principal streams of the United States. Such areas should be designated as watershed protection areas. Within such areas lands now in public ownership which are not arable and have no present or potential timber value should be so administered and managed that erosion, pollution, and torrential run-off will be held to the minimum. Such lands are generally useful for grazing. Control and management of the reserved and unreserved Federal public domain lands in this category for the purposes of preserving the land and its resources from destruction and unnecessary injury, to provide for orderly use, improve and develop the range, and stabilize the dependent livestock industry, are recognized as proper governmental responsibilities where private ownership is impracticable or will not satisfactorily serve these purposes. Tax delinquent lands in this category also should be managed for the same purposes.[4]

8. Areas of value primarily for active recreation but lacking in qualities of scenic, prehistoric, historic, or scientific interest, should be designated by some term other than "park" or "monument", such as "recreation ground" or "beach", preceded by the name of the owning agency such as "State", "county", or "metropolitan."

9. Wild life refuges are acquired or reserved for the primary purpose of preventing the extinction or undue depletion of desirable species. Some of them are absolute wild-life sanctuaries. They may also occur as supplemental designations within areas acquired or reserved for other purposes.

10. Publicly owned land not falling within the other categories herein defined may be set apart, under suitable regulations, for hunting, and may be designated public shooting grounds. Such areas will usually lack the distinctive scenic, historic, or scientific character to comply with the standards for parks or monuments, the adaptability to commercial timber production that would justify designation as forests, or the accessibility to population required of recreation grounds or beaches. The use to be made of them obviously differentiates them from wild-life refuges.

11. There are about 6,000,000 acres of commercial forest land and approximately 24,000,000 acres of grazing land held in an unallotted status within Indian reservations that should be maintained permanently in consolidated ownership for forest and range use and for water conservation under public administration as Indian forests and grazing reserves. One such Indian forest unit in Minnesota was established by Congress in 1916.

12. All public holdings of the park, monument, or recreation ground type should be extensive enough so that the public agency

[4] The national land-use committees have issued a detailed report and recommendation on this class of land, entitled "Conservation of the Grazing Resources of the Remaining Public Domain, Publication No. 4."

administering them may provide adequate protection for their major values, and to prevent or discourage developments likely to cheapen the immediate surroundings or deprive the public of its due return—intangible as well as tangible—from these holdings.

13. Public reservations acquired or established primarily for the preservation of scenic, prehistoric, historic, inspirational, or scientific values, or for outdoor recreation (whatever the name by which such reservations are designated, and whether for National or State administration) should normally be kept free from industrial exploitation of their natural resources. (Areas acquired primarily for parks, monuments, or recreation may temporarily require a type of administration which subordinates the major use to the development of conditions favorable to that use, as for instance growing a forest cover on a cut-over area.)

14. The designation of an area as a park, monument, forest, or wild-life refuge under any form of public administration (the problem of city parks, playgrounds, etc., being excluded) should be associated with definite standards as to the characteristics of the area selected and as to the major purpose for which the area is to be used; but these standards, as applied to reservations other than those established primarily for scenic, recreational, historic, or scientific reasons, should envisage use of such secondary uses as the area may afford, subject to the limitation set forth in 10, above.

II. MAJOR OBJECTIVES IN PUBLIC ACQUISITION OF LAND

Primary objectives in the acquisition of land for parks, monuments, wild life, and recreational areas indicated in the above discussion may be secondary objectives in the acquisition of land for public forests; on the other hand, primary objectives in the acquisition of land for forests may be secondary objectives in the establishment of parks, monuments, wild life, and other recreational areas. Frequently public land acquisition may be justified by a composite of objectives rather than by a single objective, and whether the area is designated a forest, a park, or in some other category is largely a matter of what objectives in administration appear to deserve greatest emphasis.

1. Timber conservation (including the growing of replacements or new supplies and demonstration forests).

This is a primary objective in the establishment of public forests. Thus far, under the Weeks and the Clark-McNary Acts, this objective, except where associated with the objective of watershed protection, has been restricted by appropriations to the establishment of a limited number of demonstration forests for the purpose of working out sound methods of forest management and demonstrating them to other owners. As shown later in this report, it is important to give this objective a broader connotation. Public forests might well supplement private forests to the extent necessary to insure an ample supply of timber of the kinds and quantities requisite to meet future needs, and to effect a more desirable and efficient geographic distribution of the supply of standing timber. The latter consideration may frequently justify public acquisition of particular areas for timber production that would not be especially significant as a mere addition to total national stock of timber.

Location is significant in determining a public acquisition program from the following standpoints:

(*a*) Nearness to regions of consumption.

(*b*) Local accessibility to facilities for transport and marketing.

(*c*) Local dependence of established industries (including farming) for materials, employment, and market outlets.

2. Watershed protection.—This objective includes maintenance of navigability, protection of watersheds of important irrigation projects, soil conservation, protection of sources of municipal water supply and sources of hydro-electric power, mainly by prevention or diminution of erosion, pollution and torrential run-off.

The reservation of lands to regulate water flow is authorized in the measures providing for reservation of public lands wholly or in part covered with timber or undergrowth for national forests. The purchase of forested, cutover, or denuded lands found to be necessary to the regulation of the flow of navigable streams, is authorized in the Weeks and Clark-McNary Acts. In several instances also the reservation of lands in the public domain not associated with national forests has been authorized as a means of protecting municipal water supply.

3. Provision of suitable habitat for game and fish.

4. Satisfaction of wants for scenery and recreation.

5. Elimination and prevention of sparse and scattering occupancy, with a view to economy in local government.

6. Prevention of settlement on areas unsuited to farming.

7. Combination of objectives.—In varying degrees the different objectives outlined are likely to occur in combination and frequently are interdependent. Therefore the administration of each unit of public ownership should envisage the realization of all the objectives compatible with the major purpose for which the unit is created.

To summarize: Our national policies of reservation and acquisition of land should be addressed definitely to the task of conserving specified natural resources, realizing a better regional balance in providing by public ownership for various uses, stabilizing local industries and employment, and providing for various needs of local populations.

III. TYPES OF LAND SUITABLE FOR PUBLIC OWNERSHIP

The selection of land for public acquisition or retention will be dictated by two groups of considerations: first, the types of land that will best fulfill the objectives in public ownership, and second, the availability and cost of the land. In the course of the next few years the second is likely to be a dominant consideration, for funds for purchase may be difficult to obtain. Consequently those objectives that can be satisfied by land acquired through tax delinquency should receive special attention at this time. This does not imply, however, that it is desirable to suspend acquisition by purchase, for delinquent lands are not usually of such character as will provide the conditions for a well rounded program of public ownership. It is possible, however, that retention of lands acquired by public agencies through delinquency might be justified by somewhat less weighty objectives and advantages than would be necessary to justify acquisition by purchase.

It may be well to review the principal objectives listed above from the standpoint of types of land that are required or that can be made to serve the purpose.

1. **Watershed protection.**—This objective may be subserved by maintaining a suitable land cover consisting either of forest growth or of other plant species, by various engineering devices for controlling or equalizing the flow of water, and by proper methods of cultivation on arable lands, depending upon conditions of climate and soil, and nature and amount of water-supply requirements of the dependent region. On the extensive treeless areas of the West, particularly on the public domain, the maintenance of an adequate cover is affected by the use. Experience has shown that competitive use of the range results in serious deterioration. So long as the land is in public ownership, regulation of use will be requisite to restore the cover and prevent its further impoverishment.

Where the aim is watershed protection by forest cover, density of forest growth and type of topography appear to be more important than degree of maturity or type of timber. It is conceivable, therefore, that were this a sole objective it could be satisfied with reasonable success by lands with an immature growth of timber, suitably located to effect the essential objective. There is, however, a large and definite public advantage in so managing the forest cover as to realize from it not only the protection of the watershed but also the maximum production of merchantable forms of timber for the use and necessities of the people, thus securing a higher economic return and deriving from such lands a large part of the costs of its protection and management. It is possible that forests, through transpiration, may reduce the aggregate local run-off, both maximum and minimum. In an area suffering from torrential floods this would be an advantage, but it might be a disadvantage where water is scarce and maximum annual flow is an important consideration. That timber growth serves to protect land against erosion is unquestionable, but whether it serves this purpose better than some other forms of land cover is less certain. This entire subject of the protective and regulative influence of various types of land cover needs further systematic investigation.

2. **Demonstration forests.**—For this objective considered alone, wide diversity in species and age of stand is desirable in order to demonstrate all phases of forest management. It appears probable, however, that if our forest ownership program were as extensive and widely distributed geographically as it should be, forests utilized mainly for other objectives could be made to serve the essential purposes of demonstration. It might only be necessary to add small areas not of the prevailing forest type in order to give the requisite diversity. In some areas, however, experiments may be needed on land hitherto used for agriculture and grazing, entirely detached from public forest.

3. **Provision of adequate future timber supply.**—While public agencies have begun an acquisition program east of the Rockies, the progress to date is markedly insufficient to supplement private production in providing for the timber needs of the future. The determination of the ultimate scope and character of such a program is now difficult because of the uncertainties of future requirements.

Volume of utilization is in large measure a function of supply, but also reflects notably the influence of technical developments which make substitutions possible. However, enough data are available to emphasize the need for an enlargement of public acquisition beyond the present programs, and to indicate in a measure some of the elements of an enlarged program.

Important conditions and trends in timber requirements and in present and future timber supply, insofar as they indicate the scope and character of an acquisition program for timber production, may be briefly summarized as follows:

(*a*) The average annual drain on all the forests of the United States during the period 1925–29 (about 16 billion cubic feet annually) is nearly double the volume of annual growth.

(*b*) Considering all classes of timber use, total drain from cutting diminished during the decade preceding 1929, due to the depression in agriculture, the completion of agricultural and railway expansion with their great demand for lumber and ties, the shifting of population to cities with resulting decrease in use of wood for fuel, adoption of various substitutes in construction, and the unavailability of supplies of certain qualities. However, until the advent of the depression in 1929 the total drain of saw timber had not diminished materially since 1920. There was a considerable expansion in certain uses, such as pulp and cellulose, but more than half of the pulpwood requirement was supplied by foreign countries. In spite of the change in the ratio of drain to growth, however, the abnormal distribution in age and quality—resulting from cutting without adequate replacement—foreshadows a long period of inadequate supply before a sustained yield consistent with normal requirements can be attained. To be sure, there are certain adjustments that would materially mitigate the outlook if they could be effected within the next few years. In some localities a larger part of the requirements for fuel and minor products could be supplied by use of tops and improvement cuttings, and certain wastes in harvesting timber could be eliminated, but thus far private timber owners, for the most part, have not found these steps profitable. The aggregate volume of growth could be gradually increased as larger areas are transferred from the status of mature forests which are subject to but little growth, to the status of growing forests; but the growing of forests on privately owned cut-over areas is now taking place, in the main, only from such natural reproduction as occurs without special provision in cutting methods. Better fire protection and better control of insects and disease would reduce the drain and materially increase growth and natural reproduction. In the eastern half of the country steps will be necessary to control grazing and the practice of burning associated with grazing wherever such practices retard desirable natural restocking.

(*c*) The future timber supply, particularly of saw timber, is also a matter of concern from the point of view of regional distribution. According to recent estimates by the United States Forest Service—estimates which, in the absence of a detailed inventory, are admittedly rough—nearly four fifths of the remaining stand of saw timber and nearly nine tenths of the softwood saw timber are in the Rocky Mountain and Pacific Coast States, the great bulk of them in the latter. The annual drain of saw timber east of the Rockies is greatly

in excess of the growth of saw timber in that territory. Of the saw timber east of the Rockies more than one half is in the South, which, while containing only one eighth of the total stand of saw timber, is supporting 46 percent of the total annual cut of saw timber. Excluding the South, a large proportion of the remaining saw timber east of the Rocky Mountains has been so culled or otherwise depreciated that its economic availability has been greatly reduced. The regions east of the Rockies, therefore, are approaching a period not very distant when a much larger proportion of their normal requirement for saw timber must be supplied, if at all, from regions west of the Great Plains.

(*d*) Ninety-eight percent of all the national cut of trees of cordwood size is in the forest regions east of the Rocky Mountains. The comparatively high ratio of growth to drain for timber of cordwood size, the short rotation period necessary to grow timber of cordwood size, and the fact that the area growing such timber is probably being increased through the cutting of saw timber might appear to indicate that the outlook east of the Rockies for timber of cordwood size is not unduly serious. A more important consideration, however, is the fact that a large proportion of the better quality should be retained as growing stock for ultimate saw-timber production.

(*e*) In general it does not appear necessary for public agencies to acquire for the primary purpose of forest production lands now employed for other uses, except such farm lands as are required in blocking up or rounding out administrative units or where submarginal farm lands would be preferable for purposes of planting to cut-over areas that would have to be cleared of weed trees and undergrowth. The present forest area of the Nation would be entirely ample for the purpose of maintaining the present aggregate annual cut of timber if the entire area were fully stocked and handled on a sustained-yield basis, and if the drain by fire, insects, disease, and wind, etc., could be held to the lowest practicable limit.

(*f*) In the eastern half of the United States forest growing stocks for saw-timber production are not satisfactory, because of (1) the extensive cut-over areas with little or no young growth; (2) disproportionate distribution of age classes; and (3) the low density of stocking on established stands. These conditions are being intensified by the excessive drain on the younger saw-timber classes, and by the cutting of young hardwood stands for cordwood.

(*g*) East of the Rockies, it is essential to reduce the drain on the remaining supply of saw timber and to conserve the stands of young growth so that they may reach saw-timber size. This would involve some curtailment of the cut of saw timber or timber approaching saw-timber size, which can probably not be accomplished without a considerable extension of public ownership of timber of those classes. Unless the pressure toward liquidation of saw timber can be somewhat relieved by the extension of public measures for fire protection and for modifications in taxation, private self-interest in the next few decades may continue to lean strongly toward rapid exploitation.

(*h*) There is a disposition to consider that the role of Federal and State agencies in land acquisition should be to take over denuded areas and leave private enterprise free to complete the process of sweeping away the remaining stands of merchantable timber.

This is the line of least resistance because of the ease of acquisition of such lands. It is true that if such areas are to be reforested, especially where planting is requisite, it will be necessary to depend in large measure on public ownership. However, the facts outlined above indicate the necessity also for a considerable acquisition of more advanced stands to promote a better regional balance in age distribution and in relation of growth to drain. This policy also will result in placing on a sustained yield basis public holdings of more significant extent than would be possible under a policy of taking over denuded areas. If private methods of forest exploitation were effectively regulated, either by the forest owners themselves or by governmental action, the public acquisition of mature or nearly mature timber would, of course, be less necessary.

(*i*) In a program of public acquisition for timber production special emphasis should be given to the location factors already mentioned. Some of these, especially the interdependence of forests and established industries, including farming, imply public acquisition of some mature or nearly mature timber as a means of economic stabilization.

4. **Providing a habitat for wild life.**—For a large proportion of the animals of woodland habits, the quality of the stand of timber is perhaps of little importance, although a variety in the species of timber is desirable. Cut-over areas with young growth of low quality for prospective timber will serve as a habitat for many species of animals, but the relation of proper cover to skillful game management is a subject that deserves more study. Nonforested areas may also provide a habitat for certain species.

5. **Scenic and recreational use.**—For scenic values a fair degree of age in timber and a diversity of species are a distinct advantage, and adaptability to commercial uses may be of less consequence. Likewise for those types of recreation which are definitely connected with scenic appreciation, fairly mature timber is desirable. For hunting and fishing, woodland areas containing young growth of noncommercial species, or areas of nonforest type, may serve. Location will be of special importance where the recreation to be provided involves more or less regular patronage from week to week by urban populations. For intermittent recreational use mainly for hunting and fishing or summer cottages, more distant areas are feasible.

6. **Effecting economies in local government.**—In most cases of land acquisition (whether of forest or nonforest land) this objective will be at least an incidental consideration. In some parts of the country it may be a primary objective, associated with other objectives.

IV. DIVISION OF RESPONSIBILITY AMONG DIFFERENT PUBLIC AGENCIES IN ACQUISITION OF LAND

In areas where public rather than private ownership appears desirable, a sharp division of function as between Federal, State, and local governments would be difficult to state in general terms, especially because in most cases several objectives will be combined in different degrees of importance. Federal and State participation of course, will be subject to constitutional limitations. Where a

particular objective is of major significance a few general lines of emphasis, however, may be recognized, as follows:

1. Protection of watersheds of navigable or otherwise important interstate streams should be a Federal responsibility.

2. Insuring stability of timber supply for the Nation as a whole and for extensive interstate regions of consumption is also primarily a Federal responsibility.

3. Timber production exclusively for the support of resident industries is primarily a State responsibility, but since the aggregate of provision for such local industries may contribute to the broader objective listed as no. 2, the Federal Government has a considerable interest in such local undertakings.

4. Preservation of scenic values, provision of habitat for game, and provision of recreational areas involve both Federal and State responsibility, depending upon whether the benefits are derived mainly by the people of a single State or whether they are nation-wide in scope. Adequate and uniform distribution of even local benefits, however, is of very real Federal concern.

5. The acquisition of areas in order to effect economies in local government is of immediate concern to local and State governments. Obviously, whatever the primary objectives in acquisition, whether principally Federal or essentially of State and local concern, the relationship to local institutional and fiscal organization will necessarily be an important consideration.

6. The above analysis of objectives in public acquisitions of land indicates that both Federal and State governments have an interest in most of the objectives considered singly, though in varying degrees, and that this mutuality of interest is intensified by the fact that in specific areas the various objectives are likely to occur in combination. Only by considering the combination of objectives in each case can it be determined whether the center of gravity lies mainly in the domain of Federal or of State interest. Many States, however, including a number where the forest problem is most extensive and serious, lack a well developed public opinion, financial ability, or both, for developing an adequate program of public ownership of land. In such States, Federal acquisition should be especially emphasized, but with due reference to the attainment of objectives of national concern. A policy of encouraging States to go as far as they are able in the development of State resources is desirable in order to make the most of State and local initiative and to avoid undue Federal centralization.

V. SCOPE OF PUBLIC ACQUISITION OF FOREST LANDS

It has become increasingly apparent that, for forest land other than farm lots, and even for a large proportion of the wood lots, the role of private enterprise, under the economic conditions of the present and probably of the next decade or two, will consist mainly in harvesting those timber crops that are merchantable or approaching merchantable age. The growing of timber by private enterprise is confined mainly to natural reproduction of species of quick growth and chiefly in connection with merchantable holdings owned by timber or woodworking establishments on a replacement basis. In some parts of the country farmers have undertaken more con-

structive methods of managing their wood lots, and a vigorous extension program may lead to an expansion of this tendency. Recognition of the noncommodity objectives cannot normally be expected of private ownership, except sporadically and on a basis of exclusive use and enjoyment. Private forest owners are not likely to give much emphasis to such considerations as the stabilization of local industries or the effect of their methods of utilization on local governmental structure and finance. Private owners will have little concern in promoting, through their individual methods of management, a more effective regional distribution of timber supply and achieving a better regional balance as between growth and drain, nor are they likely to feel responsibility in regard to the broader aspects of watershed protection, prevention of erosion, or elimination of sparse and scattering occupancy of land, except in respect to their general interest as citizens.

The Federal acquisition of forest land east of the Rocky Mountains by purchase has been limited thus far to less than 5,000,000 acres, out of a total projected purchase program of over 12,000,000 acres. No land has been purchased for forests west of the Great Plains, but in addition to the area in national forests set aside by reservation a net area of approximately 815,000 acres has been acquired by exchange of other lands or stumpage.

Most of the land purchased consists of mountain areas at the headwaters of navigable streams or demonstration forests in the South and in the Lakes States. At present the purchase program is virtually suspended for lack of funds. The States and local governments east of the Rockies own less than 11,000,000 acres of timberland, even including that which is employed for parks. Thus, nearly three fourths of our total forest area is east of the Rockies, but only about 4 percent of it is in public ownership (and therefore in the main subject to constructive management), as compared with the public ownership of nearly two thirds of the forest area west of the Rockies. An authoritative estimate of the amount and location of forest land that should be publicly acquired is not possible without detailed survey. In but few civilized countries, however, does the percentage of forest land publicly owned fall below 25 percent, ranging from this up to above 90 percent. It was estimated by the special Senate Committee on Forestry in 1924, after prolonged hearings, that at least 30 percent of the woodland area east of the Rockies should be in public ownership, or about 105,000,000 acres. This was made before the extension development of tax delinquency and other conditions outlined in this report emphasized the need for public ownership. Omitting woodland in farms, this would be nearly one half of the woodland in private ownership (about 230,000,000 acres). Some of the woodland in farms, particularly submarginal farms, together with the associated area of nonwooded land, may be found desirable for public acquisition. As already indicated, it is not proposed to purchase submarginal farm lands unless public ownership appears clearly justified by the advantages to be gained.

Considering the diversity of objectives in public acquisition and the unstable condition of our forest industry as compared with most other civilized countries an estimate of from 75 to 90 million acres east of the Rockies yet to be acquired by the various governmental

agencies—Federal, State, and local—appears to be a reasonable objective. In spite of the extensive percentage of public ownership in the West, some of the objectives mentioned, especially effecting economies in local government, may justify ultimately some public acquisition there—at least the taking over and blocking up of cut-over areas that become tax delinquent. Furthermore, much of the virgin timber in national forests is on land which not only is inaccessible but probably submarginal for the purpose of growing timber, while some of the cut-over land now in private ownership that may become public land through tax delinquency is adapted to the growing of timber when the time shall arrive for such a development.

VI. PUBLIC ACQUISITION OF LAND FOR WILD-LIFE REFUGES

Under the provisions of the Migratory Bird Treaty and the Migratory Bird Conservation Act, a well-defined program for the establishment of Federal migratory bird refuges has been formulated. The work of selecting the specific areas for such use by the United States is well advanced. To fulfill the essential objectives, such areas should be located along the main lines of migration, should comprise marsh and woodland contiguous to or embracing water areas, and preferably each refuge should contain as much as 20,000 to 30,000 acres. It is not proposed to utilize lands that are of greater economic value for agricultural purposes. There are also certain ranges on the public domain in the West that should be reserved for the purpose of preserving from extinction buffalo, antelope, mountain sheep, and other species.

Beyond this, it does not appear necessary for Federal agencies to retain or acquire extensive areas for the primary purpose of wild life refuges. The bulk of the needed refuges for migratory waterfowl, and all refuges needed for game on private forest, farm, and grazing lands should be supplied by States, counties, and municipalities or by private effort. Action in this direction by States has already been extensive. A survey of State holdings just completed shows an aggregate of 7,342,427 acres devoted to migratory bird refuges and 36,259,117 acres in upland game refuges, making a total of 42,282,799 acres.[5] The distribution by States, however, is very irregular. Many States east of the Rocky Mountains have but small areas devoted to these purposes.

In general, public lands acquired primarily for forests and other purposes will provide much of the area required for the propagation and habitat of wild life. Within National and State forests there are areas of wet land especially adapted to breeding and spawning, or lands peculiarly suited for the various purposes of "primitive" or "wilderness areas." Such lands should be designated for such special management, as these objectives require, under the general administration either of the forest authorities or of the special administrative agencies having to do with the conservation of wild life; but in either case with the closest cooperation. Steps already

[5] In the compilation of these data, made by the Biological Survey, an effort was made to avoid the inclusion of State forests and similar areas devoted to other primary uses. However, the returns from the States are not clear in all cases as to the distinction. It is not improbable also that the large areas reported by Western States include public lands that are leased to stockmen subject to their use as refuges.

taken along these lines should be further extended. Outside of these specialized areas, the greater proportion of the lands publicly acquired primarily for other purposes can serve as a habitat for wild life.

VII. PUBLIC ACQUISITION OF LAND FOR URBAN WATER SUPPLY

A number of cities have acquired lands for reservoir purposes and the protection of essential watersheds from which their supply is derived; but all the needs have not been met. Areas acquired for this primary purpose are adapted to secondary uses, with suitable safeguards, including commercial timber production, recreation, and game and fish. This major purpose should be kept definitely in view in outlining local or regional land use programs.

VIII. OTHER RECOMMENDATIONS WITH RESPECT TO LAND ACQUISITION

1. That provision be made by the Federal Government for completing the acquisition of lands within the boundaries of designated national park, forest, and wild-life refuge units through exchange or purchase as rapidly as conditions warrant.

2. That in order to determine the extent of the areas that require public ownership for most effective use, and thereby to pave the way for an enlarged program of acquisition, early provision be made for joint surveys by Federal and State Governments to answer the following important questions, among others: (a) What areas should be acquired by the public; (*b*) what objectives are to be accomplished in each case by such acquisition; (*c*) whether Federal or State acquisition is indicated by the objectives to be attained; (*d*) what administrative status should be recommended for each area—that is, whether it should be classed as a park, a forest, a game refuge, or other designation; (*e*) what is the order of importance of the various areas in point of time of acquisition; (*f*) what necessary local fiscal and institutional readjustments are associated with such acquisition. It would be too much to expect that such surveys could develop land-use plans that would be final and complete for all time. They would lay down a basic pattern, flexible and subject to modifications as conditions change.

3. That in making such joint surveys in the next few years, special attention be given to areas which appear to be unsuited for private ownership as indicated by extensive and chronic tax delinquency. By "chronic tax delinquency" is meant delinquency over a period of years, including not only recent years of acute depression but also the years preceding, when prices and income were such that tax delinquency was comparatively small in the case of land reasonably well suited for private ownership and development. In areas of chronic tax delinquency, reversion of land to some form of public ownership and control already has been more or less extensive, indicating that the owners did not deem it worthwhile to hold the land and that others did not regard it worthwhile to buy the tax certificates at tax sales.

In some States, land involved in chronic tax delinquency may not have reverted to public ownership because of indefinite laws govern-

ing tax sales and reversion of property, or lax administration, or both. In a survey to ascertain areas that may be specially adapted to public ownership, land that has not reverted for these reasons may well be considered in the same general category as chronically tax delinquent land of which a substantial part already has reverted.

Classification of land, according to the uses to which it is best suited is basic to a definite policy of taxation in relation to land use. When such classification has been made, the next problem is to determine whether public or private ownership would be more conducive to the desired utilization. If it is decided that the land should be in private ownership, it follows that it should be taxed in a manner that will aid, or at least not hinder, the utilization for which careful land classification shows it to be best suited. If the land is subject to chronic tax delinquency, the immediate problem ordinarily is one of reducing tax levies if it is to remain in private ownership. Such reduction in taxes may require either (1) removal of families from large parts of the area in order to reduce expenditures for schools, roads and other community improvements and services to a point commensurate with the taxable capacity of the property, or (2) reliance upon State or Federal aid to maintain these improvements and services. The latter clearly is not desirable, except as it may be necessary to help maintain the minimum of improvements and protection, for example, forest roads and fire protection.

If public ownership is adjudged to be more conducive to the desired utilization, definite steps should be taken to acquire State ownership by systematic purchase from present owners, by bidding in the land at tax sales, or by organizing for effective State control, the areas that have reverted to the county or other local unit.

Land reverting to public ownership through tax sales should automatically become subject to State control rather than to the control of counties or minor civil divisions. In many cases such units of local government are financially unable to assume such a load, nor can they provide the type of administration consistent with the broader objectives in public land ownership. Moreover, units of local government are subject to excessive pressure to return delinquent lands to the tax roll irrespective of whether they are adapted to private or to public ownership. Tax claims of the various taxing jurisdictions against the property should be provided for by some equitable adjustment. It is reasonable to suppose that, on the whole, the State is more competent than the local jurisdictions to manage land in accordance with some program of land utilization. Where local public ownership appears justified by the existence of a definite local interest and pride in the use of the land, together with local ability to finance the maintenance and administration thereof, the State may find it advisable to transfer the ownership of specific areas to local jurisdiction, with proper reservations to insure sound administration.

In no case should the State resort to tax levies for the purpose of acquiring land for public ownership and use beyond the taxable capacity of the land and strict laws and rigid enforcement relative to delinquency and tax sales. The legality of such a course might be questioned and certainly it would be morally indefensible. It

was not intended that the power of taxation should be used as a weapon to confiscate private property for public purpose, even if the property in question should appear best suited for public ownership.

Generally speaking, taxes on land over a period of years have been too high in relation to the income derived from land. The burden has been especially severe in recent years because of the drastic fall in income without a corresponding reduction in taxes. This is a general problem that can be met only by reduction in expenditures, and by tax revision so that the other sources of revenue will be utilized to supplement and to replace a part of the property tax on land.

Assuming reasonable adjustment in the tax system itself, laws pertaining to tax delinquency, tax sale, and reversion to public ownership, should be definite and enforced with precision. In many States, such laws need revision. However, in times of serious, prolonged depression, as in the present, undue hardships often may be imposed upon owners by rigid enforcement of tax laws designed for normal times. Definiteness of legal provisions and rigidity of enforcement are not ends in themselves, but should be adjusted to extreme conditions growing out of prolonged depression or other causes affecting whole regions and over which the property owners have no control. The State cannot afford to be arbitrary and relentless in "foreclosing" for taxes, while at the same time urging private creditors to refrain from foreclosing to satisfy claims against property.

More definite laws and exact administration may, in times like these, cause unjustifiable hardship in areas of good agricultural land where tax delinquency now is extensive because of the present depression, but where delinquency is exceptional in normal times. But in normal times, it is neither conducive to proper land utilization nor helpful to property owners, for laws pertaining to tax sale and reversion of property to be indefinite and their enforcement lackadaisical.

The National Land-Use Planning Committee has established a number of technical advisory committees to aid it in fact finding and the development of conclusions. The membership of the two technical advisory committees mainly responsible for this report is as follows:

TECHNICAL ADVISORY COMMITTEE I, ADJUSTMENTS IN SUBMARGINAL AREAS

WASHINGTON, D.C., MEMBERS

L. C. Gray, Principal Agricultural Economist in Charge, Division of Land Economics, Bureau of Agricultural Economics, United States Department of Agriculture. *Chairman.*

W. R. Chapline, Chief, Division of Range Research, Forest Service, United States Department of Agriculture.

R. E. Marsh, Assistant Chief, Branch of Research, Forest Service, United States Department of Agriculture.

C. F. Clayton, Senior Agricultural Economist, Division of Land Economics, Bureau of Agricultural Economics, United States Department of Agriculture.

E. W. Sheets, Chief, Animal Husbandry Division, Bureau of Animal Industry, United States Department of Agriculture.

S. H. Hastings, Principal Agronomist, Division of Western Irrigation Agriculture, Bureau of Plant Industry, United States Department of Agriculture.
J. A. Dickey, Senior Agricultural Economist, Office of Cooperative Extension Work, Extension Service, United States Department of Agriculture.
C. J. Galpin, Chief, Division of Farm Population and Rural Life, Bureau of Agricultural Economics, United States Department of Agriculture.
Rudolph Dieffenbach, Senior Land Valuation Engineer in Charge, Division of Land Acquisition, Bureau of Biological Survey, United States Department of Agriculture.
Lewis A. Jones, Chief, Division of Drainage and Soil Erosion Control, Bureau of Agricultural Engineering, United States Department of Agriculture.
John B. Bennett, Agricultural Economist, United States Chamber of Commerce.
T. S. Thorfinnson, Extension Economist, Extension Service, United States Department of Agriculture.
A. G. McCall, Chief, Soil Investigations, Bureau of Chemistry and Soils, United States Department of Agriculture.
Marion Clawson, Assistant Agricultural Economist, Division of Farm Management and Costs, Bureau of Agricultural Economics, United States Department of Agriculture.
Alvin D. Hathaway, Chief of Field Service, General Land Office, United States Department of the Interior.
John F. Deeds, Chief, Agricultural Division, Conservation Branch, Geological Survey, United States Department of the Interior.
W. G. Hoyt, Hydraulic Engineer, Conservation Branch, Geological Survey, United States Department of the Interior.
Conrad Wirth, Assistant Director, National Park Service, United States Department of the Interior.
W. A. Marschalk, Chief, Lands Division, Bureau of Indian Affairs, United States Department of the Interior.
A. C. Monahan, Assistant to the Commissioner, Bureau of Indian Affairs, United States Department of the Interior.

OUT-OF-TOWN MEMBERS

J. Phil Campbell, Director, Extension Division, Georgia State College of Agriculture, Athens, Ga.
David Weeks, Associate Professor of Agricultural Economics, University of California, Berkeley, Calif.
G. F. Warren, Head, Department of Agricultural Economics and Farm Management, Cornell University, Ithaca, N.Y.
George S. Wehrwein, Department of Agricultural Economics, University of Wisconsin, Madison, Wis.
M. L. Wilson, Head, Division of Agricultural Economics, Montana Agricultural Experiment Station, Bozeman, Mont.
L. M. Vaughan, Department of Agricultural Economics, Cornell University, Ithaca, N.Y.
T. P. Cooper, Dean, College of Agriculture, University of Kentucky, Lexington, Ky.
R. L. Thompson, Head, Department Research in Farm Economics, Louisiana State University, Baton Rouge, La.
J. T. Sanders, Head, Department of Agricultural Economics, Oklahoma A. and M. College, Stillwater, Okla.
W. A. Schoenfeld, Dean, Oregon State Agricultural College, Corvallis, Oreg.
F. P. Weaver, Head, Department of Agricultural Economics, Pennsylvania State College, State College, Pa.
H. W. Mumford, Dean, College of Agriculture, University of Illinois, Urbana, Ill.
I. G. Davis, Department of Agricultural Economics, Connecticut Agricultural College, Storrs, Conn.
J. I. Falconer, Chairman, Department of Rural Economics, Ohio State University, Columbus, Ohio.
G. E. Young, Assistant in Farm Management, Division of Farm Management and Rural Economics, Purdue University, Lafayette, Ind.
Sherman E. Johnson, Head, Department of Agricultural Economics, South Dakota Agricultural College, Brookings, S.Dak.
H. W. Barre, Director, South Carolina Experiment Station, Clemson Agricultural College, Clemson College, S.C.

Eli F. Taylor, Register, General Land Office, United States Department of the Interior, Salt Lake City, Utah.
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William S. Wade, Chief of Field Division, General Land Office, United States Department of the Interior, Helena, Mont.
George W. Malone, State Engineer, Carson City, Nev.
J. D. Pope, Head, Department of Economics, Alabama Polytechnic Institute, Auburn, Ala.

TECHNICAL ADVISORY COMMITTEE V, FORESTS, PARKS, RECREATION AND WILD-LIFE PRESERVATION AREAS

WASHINGTON, D.C., MEMBERS

L. F. Kneipp, Assistant Forester, in Charge Branch of Lands, Forest Service, United States Department of Agriculture. *Chairman.*
Fred Morrell, in Charge Branch of Public Relations, Forest Service, United States Department of Agriculture.
Paul G. Redington, Chief, Bureau of Biological Survey, United States Department of Agriculture.
H. H. Bennett, in Charge, Soil Erosion and Moisture Conservation Investigations, Bureau of Chemistry and Soils, United States Department of Agriculture.
L. C. Gray, Principal Agricultural Economist in Charge, Division of Land Economics, Bureau of Agricultural Economics, United States Department of Agriculture.
Samuel B. Detwiler, Principal Pathologist in Charge, Division of Blister-Rust Control, Bureau of Plant Industry, United States Department of Agriculture.
Fanny S. Herbert, Junior Administrative Assistant, General Land Office, United States Department of the Interior.
W. G. Hoyt, Hydraulic Civil Engineer, Conservation Branch, Geological Survey, United States Department of the Interior.
J. Q. Peterson, Scientist, Conservation Branch, Geological Survey, United States Department of the Interior.
H. C. Byrant, Assistant Director, National Park Service, United States Department of the Interior.
Conrad Wirth, Assistant Director, National Park Service, United States Department of the Interior.
Jay P. Kinney, Director of Forestry, Bureau of Indian Affairs, United States Department of the Interior.
A. C. Monahan, Assistant to the Commissioner, Bureau of Indian Affairs, United States Department of the Interior.

OUT-OF-TOWN MEMBERS

Raphael Zon, Director, Lake State Forest Experiment Station, University Farm, St. Paul, Minn.
S. T. Dana, Dean, School of Forestry and Conservation, University of Michigan, Ann Arbor, Mich.
Walter Mulford, Professor of Forestry, Division of Forestry, College of Agriculture, University of California, Berkeley, Calif.
R. T. Fisher, Director, Harvard Forest, Harvard University, Petersham, Mass.
Henry R. Francis, Professor of Forest Recreation, the New York State College of Forestry at Syracuse University, Syracuse, N.Y.
J. S. Holmes, State Forester, Division of Forestry, Department of Conservation and Development, Raleigh, N.C.
Ralph S. Hosmer, Head, Department of Forestry, Cornell University, Ithaca, N.Y.
Tracy I. Storer, Division of Zoology, University Farm, Davis, Calif.
Aldo Leopold, in charge of Game Survey, Sporting Arms and Ammunition Manufacturers Institute, 404 University Avenue, National Bank Building, Madison, Wis.
J. D. Pope, Head, Department of Economics, Alabama Polytechnic Institute, Auburn, Ala.
W. B. Grange, Box 154, Fish Creek, Wis.

Herbert L. Stoddard, formerly on staff of United States Biological Survey, care Sherwood Plantation, Thomasville, Ga.
Sam G. Anderson, (formerly member the Advisory Board, Migratory Bird Treaty Act) President Minnesota Game Protective League, Hutchinson, Minn.
Walter Spencer, Register, General Land Office, United States Department of the Interior, Denver, Colo.
John C. Ing, Register, General Land Office, United States Department of the Interior, Sacramento, Calif.
I. H. Nash, State Land Commissioner, Boise, Idaho.
George W. Malone, State Engineer, Carson City, Nev.
John A. Whiting, State Engineer, Cheyenne, Wyo.
Joseph S. Dixon, Field Naturalist, Wild Life Survey, National Park Service, United States Department of the Interior, University of California, Berkeley, Calif.

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National Land-Use Planning Committee
Publication No. VII
Washington, May 17, 1933

LAND-USE PLANNING IN THE TENNESSEE RIVER BASIN

The Tennessee River Basin program affords an unusual opportunity for land use planning, including the diversion of submarginal agricultural lands to other uses, reforestation, soil erosion and flood control, and for improving the income of farmers through industrial decentralization, the development of local markets and opportunity for employment in industry. From a longer time point of view the opportunity for achieving a development in the watershed planned with a view to the realization of the highest social values, is of fully as great significance as the immediate benefits from expenditure there of Federal funds, relief of present unemployment, improvement of navigation, drainage of new farm lands, development of additional power and production of fertilizer.

It is also important that the benefits from land-use planning in the Tennessee watershed be not defeated by interests seeking to gain a private advantage through land speculation or other means.

Policies Related to Planned Land-Use in the Tennessee River Basin

The National Land-Use Planning Committee conceives of the problem of furthering a planned economy in the watershed along the following broad lines:

1. As a basis of planning, a careful inventory and classification of the land resources, their ownership, and the present uses of land in the watershed, is an essential first step. This could readily be made by the collaboration of the agency in charge of the Tennessee River Basin project, the United States Department of Agriculture, other Federal agencies and the agricultural colleges and experiment stations in the States concerned.

2. On the basis of such a classification, areas would be designated for public acquisition either by the Federal Government or by the individual States. In addition to sites for dams, locks, main drainage ditches, power plants, and other structures used in the furtherance of navigation, drainage, power, and flood control, such acquisition areas might well comprise the following classes of lands:

   (a) Stands of merchantable timber in areas, many of which are now isolated, that will become accessible and acquire special significance in the industrial development of the Basin, with a view to their management for continuous yield and as a permanent source of raw materials.

(b) Cutover lands not adapted to agriculture nor to constructive reforestation by private owners.

(c) Areas of special significance for watershed protection.

(d) Areas of unusual scenic interest that lend themselves particularly to the purpose of public parks or recreational areas.

(e) Submarginal farm lands that are adapted for public ownership and use.

It is desirable that in the selection of forest areas for acquisition, consideration be given so far as possible to such lands serving a multiplicity of uses, including timber production, watershed protection, recreation, and the protection of game and fish.

3. Bilateral compacts between the several States and the Federal Government might be a means of establishing a division of responsibility in the ownership and management of lands designated for public acquisition. This would not imply joint ownership and management of specific tracts, but rather, agreements as to what areas each party would acquire and certain covenants to ensure continuity of ownership and management, the construction of the roads necessary to make the areas properly accessible, the wise use and conservation of the natural resources, and the development of rural electrification.

4. While the general principle of removing submarginal farms from continued occupancy by farm families would be an objective, it is important that such a program be developed with due consideration for the interests and sensibilities of the farmers occupying the region. Gradually some of the young people may move either to industrial centers or to farms on land better suited to farming.

5. One of the main objectives in planning for this watershed would be the decentralization of industry and the development of small industrial centers, as far as consistent with competitive conditions. This objective should be pursued less with a view of urbanizing the population of the watershed, or of promoting a large immigration, than of giving employment which will make it possible for members of farm families to continue to live on the farm. Experience at Kingsport, Tennessee, and in other industrial areas in the Basin has shown the essential soundness of this dual relationship between agriculture and industry. Among the advantages are the following:

(a) A higher standard of living for farm families who have hitherto been restricted to a relatively low standard through local overpopulation and lack of economic opportunity.

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(b) A comparatively low cost of living through residence on the farm.

(c) A greater security in periods of unemployment and a corresponding reduction in the burdens of unemployment relief.

(d) From the standpoint of industry a more elastic and dependable supply of labor.

(e) A high quality of labor having a stake in the community.

(f) Greater availability of local markets for farm products.

(g) Fuller utilization of local raw materials and their by-products.

(h) Lower realty costs for industrial sites and for the commercial and transport facilities serving the local population.

6. The gradual establishment of a number of new industrial centers will afford an opportunity to combine the advantages or urban planning with those of rural planning. Steps might well be taken from the outset to provide such communities with a carefully planned development, adequate zoning, and efficient organization of local government and public service.

7. Attempts doubtless will be made to exploit speculatively the benefits of the program, particularly through control of areas of major value for urban, industrial, or other important uses. Such tendencies should be checked by suitable regulation and control.

8. Reorganization of local government in the interest of greater efficiency and economy may be made desirable by the changes in the land use and industrial development under the proposed program.

Coordination of Agencies Involved in Land-Use Planning

Planning of the development of the Tennessee River Basin is viewed by the Committee as a cooperative enterprise in which existing agencies, both State and Federal, can render great service. An important background of research, investigation and extension has already been developed by the State Agricultural Colleges and Experiment Stations, the various bureaus of the U. S. Department of Agriculture, and by other agencies. The further requirements of rural planning it is believed can be determined and met through the cooperation, collaboration and coordination of these agencies. Although the many elements of national interest, and the necessity for national contributions to the costs of the enterprise, necessarily entail a large measure of national leadership, it is clear that the interest and full cooperation of the people of the States and communities concerned is essential if the full possibilities of the project are to be achieved.

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NATIONAL LAND-USE PLANNING COMMITTEE

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FINAL REPORT

(Including reasons why the Committee has recommended that it cease to operate as an organized agency)

Publication No. IX
Washington, D. C.
November 11, 1933

REPORT OF THE NATIONAL LAND-USE PLANNING COMMITTEE
TO THE SECRETARY OF AGRICULTURE AND THE ASSOCIATION OF LAND-
GRANT COLLEGES AND UNIVERSITIES
Chicago, November 11, 1933

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During the past five or six years there has been a rapidly growing interest in the subject of land use planning. Extensive progress had already been made in the development of systematic plans for National and State forests, parks, recreational and wild life areas. On the other hand, there has been no adequate policy with reference to agricultural land. In fact, such policies as are still existent, as for instance, the homestead legislation, are obviously out of line with present and prospective requirements. The need for an adequate policy for agricultural land has been given special emphasis by the serious maladjustments, particularly in extensive areas of submarginal land and in numerous communities where standards of individual and community life are abnormally low.

The ravages of erosion, reckless exploitation of forest and grazing resources, numerous and increasing areas of "idle" land, extensive tax delinquency and farm abandonment, with the consequent institutional and social maladjustments emphasize forcibly the importance of developing a well integrated national land policy.

It had also become increasingly obvious that there was not proper coordination in the policies employed by the various Federal and State agencies. Frequently such policies were inconsistent and poorly correlated.

Formation of the Land Use Committees

In view of the widespread recognition that "we need a new national land policy", the Secretary of Agriculture, in collaboration with the Association of Land Grant Colleges and Universities, called a national conference on land use, which met at Chicago in November, 1931. (See Proceedings, published by the United States Department of Agriculture.) The conference was attended by about 300 persons representing various public and private interests concerned with land and land policies. After a full discussion of different aspects of the land problem the conference adopted a series of resolutions expressing its views as to basic principles that should underlie a new land policy. Furthermore, in order to facilitate the development of such a policy, it proposed the formation of two national committees. One of these, the National Land-Use Planning Committee, was designed to represent various official agencies of the Federal and State governments having to do with land administration and research. The second committee, the National Advisory and Legislative Committee on Land Use, was designed to represent various unofficial agencies having important interests in land problems. The agencies to be represented on both committees were designated by the conference, and the Secretary of Agriculture was asked to invite these various agencies and organizations to appoint members on the two committees.

In accordance with the expressed wishes of the Conference, the National Land-Use Planning Committee was composed of the following fifteen members:

The Chief of the Bureau of Agricultural Economics,
Mr. Nils A. Olsen (Vice Chairman)
The Chief of the Bureau of Chemistry and Soils,
Dr. H. G. Knight
The Chief of the Forest Service,
Major R. Y. Stuart
The Chief of the Bureau of Agricultural Engineering,
Mr. S. H. McCrory
The Director of the Extension Service,
Dr. C. W. Warburton
The Director of the Geological Survey,
Dr. C. W. Mendenhall
The Commissioner of the Bureau of Reclamation,
Dr. Elwood Mead
The Commissioner of the General Land Office,
Mr. C. C. Moore
A member of the Federal Farm Board,
Mr. S. H. Thompson
A member of the Federal Farm Loan Board,
Mr. J. H. Guill
Five representatives of the Association of Land-Grant Colleges and Universities, designated by the Executive Committee of the Association: Provost A. R. Mann, of New York; President H. A. Morgan, of Tennessee; President F. D. Farrell, of Kansas, (Chairman of the Committee); President H. L. Shantz, of Arizona; and Dean C. B. Hutchison, of California.

Thus the Committee began with five members from the Department of Agriculture, three from the Department of the Interior, one from the Federal Farm Board, and one from the Federal Farm Loan Board (a total of ten from the Federal Government and five from the Association of Land-Grant Colleges and Universities).

Work of the Land Use Planning Committee

At its first meeting, held in Washington, February 15 to 18, 1932, the Committee appointed as Executive Secretary, Dr. L. C. Gray, of the Bureau of Agricultural Economics. The Committee wishes to express its high appreciation of the services of Dr. Gray, upon whose shoulders the bulk of the work has fallen and who has discharged his arduous duties with devotion and ability that deserve the highest commendation.

The Committee has held nine meetings covering a total of 35 days. At three of these meetings joint sessions have been held with the National Advisory and Legislative Committee on Land Use.

Soon after its organization the National Land-Use Planning Committee decided to set up twelve technical committees to assemble data and make recommendations regarding the twelve fields into which the Planning Committee divided its work. These divisions are indicated by the names of the technical committees shown in the following table:

Number	Name	Number of Members: In Federal service	Outside Federal service	Total
I	Adjustments in Sub-Marginal Areas	26	18	44
II	Adjustments and Reorganization in Better Farming Areas	15	16	31
III	Land Inventories and Land Classification	20	10	30
IV	Agricultural Outlook	10	9	19
V	Forests, Parks, Recreation and Wild-Life Preservation Areas	17	16	33
VI	Agricultural Credit	11	10	21
VII	Adjustment and Reorganization in Taxation in Relation to Land Use	9	15	24
VIII	Oil, Gas, and Other Mineral Rights Underlying Farm Lands	(No members designated)		
IX	Public Range Policy	20	15	35
X	Reclamation, Drainage and Irrigation Policies	18	20	38
XI	Control and Direction of Land Settlement	15	14	29
XII	Land Values	14	10	24

The personnel of these technical committees comprises 270 individuals. They were selected from 27 bureaus in eight departments, boards, and commissions of the Federal Government, from the Land-Grant Colleges of 37 states, from state agencies other than Land-Grant Colleges in 19 states, and from 16 agencies that are neither state nor federal, - farm organizations, endowed universities, foundations, and the like. This wide selection was made for the purpose of enlisting the aid of a large number of people representing every major aspect of land utilization and every important geographic division of the United States. Most of the work that has been accomplished by the

Planning Committee is based on data supplied by the technical committees. The Plannint Committee is grateful for the aid it has had from these committees. Like the members of the Planning Committee, the members of the technical committees have served without compensation.

Because of the widespread interest in the subject of land utilization the Planning Committee from the date of its first meeting has been pressed for suggestions and information desired by people and agencies wishing to make comprehensive attacks on land use problems. This interest has been served in part by the issuance of several formal publications. The first of these publications was a statement on "The Relationship of Urban Unemployment to Land Utilization and Settlement", issued in June, 1932. Another statement, issued in March, 1933, entitled "Suggested Principles of State Legislation Relating to the Use of Underground Waters", lays down principles for the guidance of states in formulating much needed laws relating to one of the most important land resources in arid regions. In March, 1933, the Committee issued a statement entitled "Conservation of the Grazing Resources of the Public Domain". This relates to the important and difficult problems of conserving the grazing resources of 176,000,000 acres belonging to the Federal Government in the Western States. A circular entitled, "The Problems of Submarginal Areas, and Desirable Adjustments with Particular Reference to Public Acquisition of Land", was issued in April, 1933. This publication contains basic information and recommendations of value in dealing with one of the most difficult phases of land utilization. In May, 1933; the Planning Committee issued a statement entitled, "Land Use Planning in the Tennessee River Basin". Other formal publications relate to the Committee's organization and method of procedure. The latest publication is an outline of a national research program in land use prepared in response to a resolution of the Experiment Station section of the Association of Land Grant Colleges and Universities.

The Planning Committee has responded to several calls for assistance from groups that are actively concerned with state or regional programs of land utilization. Assistance has been given at state land utilization conferences in Wisconsin, Missouri, New Jersey, and Kansas.

The Committee has been associated with the development of State land utilization projects in Georgia and Minnesota, and has contributed its influence toward promoting coordination of activity on the part of Federal and State agencies necessary to carry out comprehensive State programs of land use planning. In both of the states mentioned the land use planning projects are developing into comprehensive programs of action. Moreover, the work of the Committee has stimulated interest in other states with the result that many are reshaping their research and extension work toward land use planning.

Through its publications and other activities the Committee has contributed to the development of informed public sentiment favorable to programs of wise use of land and to better coordination of effort in this field by Federal, State, and other agencies. 1/

1/ For a fuller account of the work of the Committee, see the Annual Report of the National Land-Use Planning Committee, Publication No. 5, July, 1933.

Recent national developments have made it possible to obtain action with a degree of celerity not anticipated at the time the Land Use Committees were formed. During the past six months we have witnessed such far reaching developments as the setting up of the Tennessee Valley Authority, the establishment of the Subsistence Homesteads program, the appropriation of more than five million dollars for erosion control, a notable extension in the forest purchase program, employment of the Civilian Conservation Corps for improving the physical status of forest and park resources, development of the Agricultural Adjustment Administration with its far reaching implications with reference to land use and land policy, formulation of the lumber code including notable provisions for timber conservation, an expansion of Federal activities in land reclamation, and the development of an extensive program for the retirement from cultivation of inferior farm lands.

These developments have intensified the need for comprehensive land use planning and for further coordination of the various agencies concerned. The need for a better coordination of the functions and activities of Federal agencies in the field of land policy has been provided for through the establishment of the National Planning Board and through the appointment of a joint committee to represent the Department of the Interior and the Department of Agriculture in carrying on land use planning, with particular reference to the furtherance of a policy for the retirement of poor farm lands.

It has become apparent that the National Land-Use Planning Committee, as originally constituted, has accomplished the work which it was adapted to perform and that the Committee could not function effectively as a Federal coordinating agency under the conditions that have developed during the past six months.

There is need, however, for a consultative agency, largely representative of State and local interests, to promote the integration and coordination of Federal policies with the policies and interests of the States and of local governmental units. We are encouraged in this view by the following letter from the Honorable Frederic A. Delano, Chairman of the National Planning Board, addressed to the Executive Secretary of the National Land-Use Planning Committee:

> "Learning of your meeting in Chicago on November twelfth, and in view of the steps taken to organize a Land Planning Committee here in Washington, I am anxious to convey through you to the meeting in Chicago the interest and appreciation of the National Planning Board in the accomplishments and contributions to the cause of planning made by the Land-Use Planning Committee and the National Advisory and Legislative Committee on Land Use.
>
> "At the suggestion of this Board, the Secretaries of Agriculture and Interior have appointed a joint committee to serve with the Executive Officer of the Planning Board. This committee will carry on the coordination of inter-departmental problems and

the study of land use plans by Government agencies. It is in effect a continuation of the work of the National Land-Use Planning Committee under the auspices of the two Secretaries. It would be a pity if the organization of this official Land Planning Committee were to interfere in any way with the interest and activities of the Land-Grant Colleges and interested citizens in the field of land use planning. It is always desirable to have the outside point of view of such groups available to official agencies, whether for support or criticism.

"May I express the hope that a way will be found to continue some organization of these groups for land planning research and education of the public, possibly on a basis of regional representation?"

Recommendations

1. That the National Land-Use Planning Committee be discontinued.

2. In order to preserve continuity of the functions of the National Land-Use Planning Committee and to effect a transition to a later organization such as is suggested in Mr. Delano's letter, it is recommended that the Association of Land-Grant Colleges and Universities appoint a Committee of that Association to consist of not fewer than seven members, and that the Association offer to the Secretary of Agriculture and other Federal officials concerned with land policies the cooperation of the Committee. This committee should serve the purpose of further stimulating the interest of the Land-Grant Colleges in land use planning and encouraging close cooperation between the colleges and the various Federal and State agencies that are being developed for the furtherance of land use planning.

3. The rapid developments in the field of land use, including the prospect of reshaping the work of the Agricultural Adjustment Administration toward permanent methods of production control and long-time readjustments in the use of farm land will exert a profound influence on agricultural research and extension. It therefore appears obvious that the work of the proposed committee can be of great significance to the land-grant institutions. We recommend, therefore, that the Association take steps to finance adequately the meetings and the work of the Committee.

In course of time the now evolving Federal mechanism for land use planning will probably reach the degree of definiteness that will make it possible to determine the most desirable form and membership of an affiliated national council or committee that will be representative also of non-Federal agencies and interests.

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Scope and Character of a National Cooperative Research Project in Land Utilization

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Publication No. 8
Washington, D. C.
August, 1933

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Agriculture.
S. H. McCrory, Chief, Bureau of Agricultural Engineering, U.S. Dept. of Agriculture
R. Y. Stuart, Chief of the Forest Service, U. S. Department of Agriculture.
C. W. Warburton, Director of Extension Work, U. S. Department of Agriculture.
Sam H. Thompson, Federal Farm Board. (Resigned and successor not appointed.)
John H. Guill, Farm Credit Administration.
Elwood Mead, Commissioner, Bureau of Reclamation, U. S. Dept. of the Interior.
W. C. Mendenhall, Director, Geological Survey, U. S. Dept. of the Interior.
Fred W. Johnson, Commissioner, General Land Office, U. S. Dept. of the Interior.
A. R. Mann, Provost, Cornell University.
H. A. Morgan, President, University of Tennessee.
H. L. Shantz, President, University of Arizona.
C. B. Hutchison, Dean, College of Agriculture, University of California.

***

OTHER PUBLICATIONS ISSUED BY THE NATIONAL LAND-USE PLANNING COMMITTEE AND THE NATIONAL ADVISORY AND LEGISLATIVE COMMITTEE ON LAND USE:

No. I. Resolution with Reference to the Relationship of Urban Unemployment to Land Utilization and Settlement. (Mimeographed.)

No. II. Organization and Objectives of the National Land-Use Planning Committee and the National Advisory and Legislative Committee on Land Use. (Mimeographed.)

No. III. Suggested Principles of State Legislation Relating to the Use of Underground Waters. (Mimeographed.)

No. IV. Conservation of the Grazing Resources of the Remaining Public Domain. (Mimeographed.)

No. V. First Annual Report (From Date of Organization to June 30, 1930). (Mimeographed.)

No. VI. The Problems of "Submarginal" Areas, and Desirable Adjustments with Particular Reference to Public Acquisition of Land. (Printed.)

No. VII. Land-Use Planning in the Tennessee River Basin. (Mimeographed.)

In addition there have been issued a number of press statements on various subjects.

Copies of these publications may be obtained from the Executive Secretary, National Land-Use Planning Committee, United States Department of Agriculture, Washington, D. C.

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SCOPE AND CHARACTER OF A NATIONAL COOPERATIVE RESEARCH PROGRAM IN LAND UTILIZATION

I. Introduction

At a meeting of the Experiment Station section of the National Association of Land-Grant Colleges and Universities in November, 1932, it was voted to develop a national cooperative research program (or "project") similar in general scope to several national projects already developed under the Purnell Act. The National Land-Use Planning Committee was asked to outline such a program, and this outline has been prepared by the Committee pursuant to that request. It does not represent an attempt to indicate minutely all details of methodology, but rather, to suggest the broader objectives, lines of procedure, and research relationships and organization.

II. Objectives of a Research Program in Land Utilization

Broadly generalized, the objective of a program of research in land utilization is to ascertain the amount, area, and location of land suitable for various uses, to determine the optimum uses of different types of land, with particular reference to public welfare, and to point the way to formulation of a program of action, individual and collective, needed to bring about such shifts in the uses of land or in the ownership, the form and amount of taxation, and other conditions, as will result in more effective use of the land resources of particular localities and of the Nation as a whole, and such institutional and fiscal adjustments as are logically associated with such a program. The aims of a sound land utilization program are broader than conservation, for they include not only the maintenance of our natural resources, but also types of use which contribute to a well balanced and wholesome pattern of community life. While individual advantage will often be consistent with such objectives, a land uutilization program should give special emphasis to collective interests. It constitutes an important segment of, and interpenetrates other segments of, economic planning.

The general objective stated above may be broken up into a number of sub-objectives, each of which may require contributions from a number of specialized fields in the natural and the social sciences. The combination of sub-objectives may vary in content and relative emphasis in different regions, States, or localities. The following list of sub-objectives is broadly representative. The items in the list are not mutually exclusive, but closely interrelated. A number of them are not ends in themselves but means to the realization of the general objective already stated.

1. As a basis for a more intelligent determination of economic policy, obtain a conception of the surface land resources available for various uses and their geographic distribution.

2. Develop the factual basis necessary to guide public policy in determining what proportion of the land area nationally or regionally to devote to different major uses - that is, whether to encourage large or small proportions for cultivation, forests, parks, etc.

3. Determine what lands in particular areas to employ for farms, for forests (exclusive of woodlots), for extensive grazing, and for other uses, having due regard to the private and public interests involved. (Essentially an economic classification of land, which is basic to or an essential part of most of the other research sub-objectives which follow.)

4. Ascertain the relationship between taxation and land utilization and what changes in assessment or in method or rate of taxation would facilitate continued private ownership and a reasonably constructive use by private enterprise.

5. Determine what lands should be retained in or acquired for public uses, such as parks, public forests, bird and game refuges, etc., and whether for local, State, or national ownership, including a program of utilization for abandoned farms and tax delinquent lands.

6. Ascertain what changes in private landownership (e.g., through subdivision of unduly large holdings or consolidation of unduly small holdings) would contribute to more effective methods of land use and to avoidance of excessive losses from erosion or other causes of impairment of fertility.

7. Determine what changes in the use and ownership of lands are needed to make possible a more effective distribution of public institutions and services, and economy in cost of local government.

8. Provide a factual basis for discouraging the settlement of lands unsuited to farming or a distribution of population that is inconsistent with efficient and economical organization and functioning of local government.

9. Contribute a sound research methodology to determining the economic feasibility of new projects for draining, irrigating, reforesting or otherwise reclaiming land by collective action; likewise to aiding in the financial reorganization of financially distressed reclamation projects.

10. Develop effective methods of management and protection of timber lands, whether in private or in public ownership.

11. Determine what steps should be taken to promote a closer coordination of agriculture and industry, through development of so-called part-time farming, with a view to increasing the stability of both.

12. Determine what steps should be taken to secure a more desirable relation than now prevails between land use and the control and use of agricultural credit.

13. Indicate the procedure necessary to promote watershed protection and the conservation of water in areas of scarcity.

III. Geographic Variations in the Problems and Objectives in Land Use

The need for adjustments in land utilization is obviously great in regions containing large areas of marginal or submarginal land or idle land. Some of the most uniformly superior farming areas also are confronted with serious problems calling for collective action to effect needed adjustments in land use or conditions of land use. The problems of land utilization vary materially in different regions of the country, and these variations will be influential in determining the character of the research program in land utilization that will be most helpful in a particular State.

A few illustrations will serve to emphasize these geographic divisions in the problem of land use. Most wooded areas of the country, for instance, are confronted with the various problems growing out of the cutting away of the timber, while this does not materially enter into the land use problem in the major portion of the arid section of the country. Cutover lands, however, present a much more serious problem in areas where timber holdings were formerly large, as in the Gulf Coastal Plain and the Northern Lakes States, than in portions of the Appalachian region where timber ownership is generally an incident of farm ownership. Portions of Northern Lakes States are troubled by the problems of a sparse and scattered population, while extensive parts of the Southern Appalachians are characterized by overpopulation. The problems associated with farm abandonment are as yet much more serious in the northern Appalachian region than in the Southern Appalachians, in spite of the greater advantages enjoyed by the former region by reason of nearby urban markets, greater adaptability to dairying, and opportunities for obtaining summer boarders; a contrast due to the greater prevalence of commercial standards in the northern region. Portions of the old Cotton Belt are handicapped by large land holdings, the owners of which are in general financially unable to develop a sound type of land utilization. On the contrary, large sections of the Great Plains, by reason of the operation of the Homestead System, suffers from the disadvantage of unduly small holdings. The problems associated with erosion and soil depletion are in general more serious in areas of broken than in areas of smooth topography and more serious in areas of heavy rainfall and long summers than in areas of slight rainfall and long winters. The Western States are confronted by problems growing out of the large proportions of their area in various forms of public ownership, as well as the problems associated with irrigation. Other illustrations of the geographic diversity of the problems of land utilization could be multiplied at length.

IV. Importance of Federal-State Collaboration in Land Use Planning and Research

The problems of land utilization are of local, State, and national concern. Certain types of adjustment affecting or related to land use depend largely upon State action, such as changes in taxation, incorporation and regulation of reclamation districts, regulation of land sales and private land settlement, zoning laws, regional planning, and legislation with respect to land tenure and water rights. Certain activities have come to be exercised by both the Federal Government and the State Governments such as forest protection, forest ownership, supply of seedlings, reclamation of land, protection of watersheds and regulation of stream flow, and establishment of public parks and game refuges. The Federal Government may profoundly influence the local pattern of land utilization through its agricultural, forest, and water conservation policies. Both the Federal Government and the States are in possession of important information required for land use planning, and both maintain research services that should contribute their information and experience. Federal collaboration is essentially desirable

in the interest of the unification of aim and standardization of method that are essential if the aggregate efforts of both State and Federal agencies are to be most fruitful. It is important not only to effect a coordination of policy but also to promote sufficient uniformity in terminology, classification, and methodology to make possible aggregating and comparing the results of various local investigations.

V. Essentially Synthetic Character of Land-Use Research

Since the essential objective of a land use program is to promote effective use of specific areas, the research involved necessarily requires a synthesis of the available knowledge and the accumulation of additional knowledge by a considerable number of specialized scientific units of work in the Federal Government, State experiment stations, and other State agencies. Among the groups some or all of which may contribute in various combinations are workers in soil surveys topographic surveys, climatology, agronomy, animal husbandry, silviculture, forest economics, agricultural engineering, rural sociology, and a number of specialized segments of agricultural economics, including land economics, farm management, agricultural taxation, and farm finance. State administrative offices devoted to agriculture, forestry, roads, taxation, education, and conservation may need to be enlisted either to contribute available data and investigational aid or to collaborate in the determination of types of action.

The above statement does not imply that all the research divisions and agencies mentioned will need to bear a major part in a particular program or that all will need to participate even incidentally in every area. In some areas participation by certain specialized divisions of research may well be limited to contributing available information. Furthermore, the mere fact that a specialized research project has a definite geographic locus does not constitute it a land utilization project. For instance, a survey undertaken by any of the groups mentioned above, such as those concerned with soil, topographic, climatological, or agronomic surveys, when such work is unrelated to a land use program aimed at attaining the general objectives outlined above would hardly be regarded as a land utilization project, though it might well constitute an important unit in a definite program of land use research.

A research program in land utilization should be shaped essentially toward defining and applying a course of action that will serve to realize the above objectives. The Federal Government and most of the States have yet far to go in shaping a set of policies that will permit the development of sound land use programs. Consequently, research work in the first instance may need to take the form of obtaining the necessary facts to define policies and educate public opinion as to their significance. Much investigation is also required for the purpose of carrying into effect or giving local application to land use policies, Federal, State, or local and the institutional and fiscal adjustments vitally associated with such policies. To illustrate: Investigation is needed in order to determine what lands to purchase under a policy which provides for the acquisition of a given amount of land; but investigation may also be helpful in indicating whether the objectives, scope, and procedures of the existing policy are justified.

It follows that such investigation will, in general, not be aimed at the discovery of laws of wide application - although this may be incidental, - but at describing specific situations and problems and determining what adjustments or solutions should be recommended. At the same time some of the segments of the work particularly those contributed by the physical sciences may well be shaped with a view of their permanent, as well as their immediate value.

VI. The Problem of Coordination

The essentially synthetic character of action and research in land utilization and the mutual interests and responsibilities of various Federal, State, and local agencies obviously imply important problems of coordination. Since the various services required in the Federal Government are now diffused among a number of bureaus and divisions, the National Land Use Planning Committee has undertaken the function of enlisting their cooperation and encouraging collaboration of effort in the development of land use programs in particular States. It is the only agency available to fulfill this function unless or until some new agency shall be established. The Committee has already associated itself with such programs in two States. In the States the Committee can perhaps be helpful in lending its aid in crystallizing interest and facilitating collaboration with Federal agencies.

The permanent agency for coordination within the State may differ in accordance with the particular circumstances. In one case a board of regents controlling the various educational institutions provided the requisite focus; in another State the director of the agricultural experiment station. It is conceivable that in one or two States a State conservation commission might prove to be the logical agency for coordination, but in the great majority of States the State agricultural experiment station will need to supply most of the necessary investigation and therefore will assume responsibility for continuity of research on land utilization within the States.

It is the essential aim of research in land utilization to facilitate the development of a sound program of action, whether in the form of legislation or of local adjustments, individual or collective. In some cases preparatory and explanatory research is needed before an attempt is made to promote action. In other cases the time may be ripe to initiate the first stages of a program and research is needed to define the details of action or indicate the proper application to local conditions. Research in land utilization will usually be most fruitful if the interest of action promoting groups is early enlisted. It may or may not be feasible for the research agencies to assume leadership or participate in the program of action. It may be desirable to establish an action promoting agency with which the research agencies are associated, such as a State land use committee composed of competent persons with necessary technical background and administrative connections. In some cases a sponsoring committee of eminent citizens served by subcommittees or advisory committees of technicians and administrators may be found advisable, since it affords a means of mobilizing public opinion. Sometimes the appointment of such a group may be effectively initiated by a State land use conference.

Whatever may be the general agency for coordination of research or promotion of action, it is essential that the immediate direction of such a program should be entrusted to a competent economist, - preferably a land economist, - for the essential objectives are economic and the data contributed by the various participating agencies should be selected and related with a view to arriving at economic conclusions. The essential task of coordinating the various groups of facts in such manner as to arrive at conclusions with regard to optimum use of the land and the associated adjustments constitutes a distinct and evolving technology being developed by land economists.

VII. Elements in a National Program of Research in Land Utilization

The following are some of the important elements of a national program of research in this field. In listing them separately there is danger of conveying the impression that they are separable, whereas to fulfill the purposes of developing a land use program the different elements will usually need to be associated in various combinations, according to immediate objectives and local conditions. 2/

1. Taking stock of or describing natural resources and conditions of land use, e.g., topography, soil classification and erosional phase, climatic conditions, forest and forage cover, drainage, etc.- For extensive areas there are detailed surveys completed or under way for topography, soil, and forest cover, besides the systematic collection of climatic data. In order to economize in the cost of the research necessary to achieve the essential economic objectives, it will frequently be possible to avoid the development of uniform detailed surveys to be applied indiscriminately to all parts of an area. For some parts available data may be sufficient to afford a basis for sound economic judgments as to the major use for which the land is best adapted or the proper use may be fairly obvious so far as dependent on physical conditions. On the other hand, the problem of determining the most economical use of the land may be so difficult that very full data on soil, topography, range and forest cover, rainfall and other climatic factors are essential. After taking full stock of the already available data, it may be found desirable to supplement them by mapping a single land character such as soil or to obtain data on a number of natural features such as soil, topography, and cover in a single survey. A possible danger may be the gathering of more data than are needed for reaching sound conclusions concerning all parts of the area. One important consideration is the fact that some of the data on natural conditions, such as forest cover, for instance, may be comparatively impermanent. It may frequently be inadvisable to assemble such data too long in advance of the time when they will be translated into economic conclusions and action.

2. Determining the typical associations, or complexes, of the various natural features which may be designated as natural type area. - Division of the country into the various natural divisions and subdivisions has value in providing a birdseye view of contrasting types, facilitating the definition of the areas presenting special problems in land utilization and providing a basis for relating statistical tendencies to the characteristic natural units. Such a project has been carried out for the entire United States by the Division of Land Economics (Bureau of Agricultural Economics), in consultation with experiment stations in the various States, and a resulting map will

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2/ Useful definitions and suggestions as to procedure for research in this field will be found in "Research in Agricultural Land Utilization - Scope and Method," edited by John D. Black. Bulletin No. 2, Social Science Research Countil (New York, June, 1931).

shortly be published. The groupings, however, are generalized and for purposes of local land use studies may frequently require more detailed physical analysis.

3. Determining the physical adaptability of certain natural type areas to various types of use. - This covers broadly a considerable part of the natural science work carried on by agricultural, forest, and range experiment stations. In general the research processes require a considerable period of time to reach conclusions, and when economic judgments must be arrived at, it may frequently be necessary to utilize the data available, even though inadequate, without waiting the slow processes of natural science research. It is desirable, however, to anticipate such needs as much as possible and to direct the natural science research more definitely toward conclusions as to the physical adaptability of various natural type areas that will be serviceable as a basis for needed economic judgments with reference to land use. The National Land Use Planning Committee has encouraged the development of a project for arriving at judgments of the physical adaptability of various natural type areas on the basis of already available data. The natural type areas are less highly generalized than those referred to in Number I, above. This project is being carried out by the Bureau of Chemistry and Soils and the Division of Land Economics, Bureau of Agricultural Economics, in cooperation with State Experiment Stations. The results will supply a useful basis for estimating the amount of land available for different uses, for economic decisions (where these must be made), and for the additional research requisite. Conclusions regarding physical adaptability of various land types may be reached by the following methods:

   a. The experimental method - plot experiments more definitely aimed at testing the adaptability of various land types. This method has certain limitations, however, for purposes of practical land use conclusions partly because of the non-representative methods as compared with the average practice and partly by reason of the special use history of the plot itself. Moreover, the method is usually too slow to contribute to present requirements except from projects long under way. The results of past experience can be used by interpretation through correlation with land characters determined by surveys.

   b. The historical method - collection of records of performance under various types and methods of use either from documentary sources - rarely available or adequate - or from individual testimony - likely to be inaccurate as to past experience. The method is of little practical value unless the data are applicable to particular spots or localities.

c. The statistical method - annual reports by farmers as to yields, carrying capacity, etc. for particular areas or types of land, with proper arrangements for checking. This method could probably be advantageously employed more extensively as a basis of obtaining indications of adaptability.

d. The observational method - more particularly in determining growth rates of timber by borings, study of ring growth on stumps, etc. with reference to particular land types.

4. Determining the amount of land that it is advisable to devote to various uses.-

This involves virtually the determination of the scope and direction of production of agricultural and forest products. The undertaking, therefore, is not primarily a land utilization procedure, though the results contribute to a more intelligent formulation of land use policies and programs.

Land use adjustments are made with reference to future production, and in the case of establishing new farms or new forests, with reference to production for a considerable period of time. Therefore, the undertaking under consideration consists essentially of long time forecasts of production requirements and the translation of these into land requirements. Since future requirements may be largely influenced by national policies at home and abroad and since the available statistical information of various aspects of the problem are not all that would be desired, it is clear that only approximate indications can be expected, which may serve in a measure for orientation in the formulation of land use policies.

While it will be helpful to analyze the various factors that are likely to determine the volume of production that will be justified and the amount of land required, these questions cannot be wholly divorced from the amount and character of land available. The smaller the geographic unit considered, the more the question of land requirement becomes merged with analyses of comparative advantage for specific units of land and tends to merge into the procedure of economic classification of specific areas.

This segment of a program of research may be undertaken for the Nation as a whole or for specific regions. The former is essentially a task for which Federal agencies are best equipped. The regional outlook will be largely related to the national, and therefore should be a matter of cooperation between the Federal Government and States.

5. Classifying land according to the major economic uses for which it is best adapted. - The following important observations formulated by one of the technical committees of the National Land-Use Planning Committee will be helpful in indicating the nature of the task of economic classification concerning which there is widespread misapprehension.

"Where the emphasis in economic land classification is mainly in determining what use of the land is best justified from the standpoint of private economy, the classification is associated with the concept of marginal land, and its correlatives submarginal and supermarginal. (The term "marginal" is frequently incorrectly employed as a synonym of "submarginal".)

"Marginal land may be defined in general terms as land where the output just balances input including a proper allowance for the depreciation and interest on capital other than land and for the labor of the operator and his family. This comparatively simple concept, however, requires numerous further refinements and involves numerous difficulties in application, some of which are as follows:

"1. Marginality must be expressed with reference to a specific use of the land. Land that is submarginal for one use may be supermarginal for another use.

"2. It is obvious, moreover, that one must have in mind a period of time. It has never been proposed to judge the marginality of a particular class of land for agriculture by the results of a single year. It is obvious that if a long period of years were the basis of judgment, land which is supermarginal on the average might yield subnormal returns for a sufficient number of consecutive years to occasion serious difficulties to the operators. The time element is also significant in determining whether the interest and depreciation on improvements are to be considered in deciding whether the land shall continue to be farmed.

"3. The economic adaptability of land cannot be judged in terms of the superlative efficiency of the exceptional farmer nor on the basis of the showing of that segment of the farm population characterized by extreme inefficiency and improvidence; but no definite formula has become accepted for the delimitation of the concept of margin as between these extremes.

"4. Prospective prices and costs, as well as technological changes, are necessary considerations in formulating judgments as to economic land classification.

> However, the necessity for taking account of such future developments, difficult and uncertain as it may be, is encountered in all economic judgments private or public, made as a basis for a program of action.

"Submarginal lands often are so intermingled with better grade lands, especially in areas of broken topography, that a given farm unit may contain land very inferior for crops but of special value as woodlots, pasture, or in other ways. Under such conditions a judgment as to marginality normally must be applied to the farm unit, and in some instances, adjustments in farm boundaries may make the difference between submarginal and supermarginal classification of an individual unit.

"Marginality for private uses must be formulated in the light of possible readjustments in the economic environment, such as modifications in tax burden, improvements in transport and marketing facilities, etc., that may exert a very real influence in making possible the profitable utilization of land for a given purpose.

" In many parts of the United States farms are operated by families who disregard the balance between input and output and occupy land where output is normally less than input when both are valued in commercial terms. Included in this category are mountaineers and residents of isolated communities that follow a traditional mode of life which may be submarginal when compared with the standard of living prevailing in areas of commercial agriculture; together with part time farmers and families relying on supplementary sources of incomes such as pensions, including people of advanced age who are supported by their children.

"Lands so occupied would have to be regarded as submarginal from a commercial standpoint, but in many cases lack of experience or resources preclude moving to another environment or engaging in other occupations. The prevalence of unemployment and the possibility that technological unemployment may continue for some time to present difficult economic and social problems cannot be ignored in this connection.

"The above points illustrate that the commercial distinction between submarginal and supermarginal land, -- a concept formulated as a basis of defining what is economically sound from the standpoint of private enterprise motivated essentially by the objective of profit-making -- must be supplemented by other considerations when viewed from the standpoint of public interest and policy with respect to land use. It may be to the public advantage to permit or even encourage the occupancy of land that is submarginal for commerical agriculture.

"The economic adaptability of land to particular forms of use, or what may be called economic land classification, therefore will take the form largely of the formulation of economic programs for particular areas -- that is, economic planning."

Procedure in economic classification will vary in method, content, and relative emphasis in accordance with special conditions in the area. The following are some of the steps that will be found more or less desirable, according to circumstances:

A. Mapping the existing pattern of land use.

(1) By tabulation of census data (in some States also assessor's statistics on type of land and land use) by townships or other minor civil divisions. To some extent the pattern of use thus revealed may be related to land character, but the geographic coincidence is far from complete and the use pattern is frequently lacking in important details. The procedure may be useful for obtaining tentative generalizations concerning extensive areas.

(2) By field surveys.

(a) Aerial photography

Reveals many features of land use in situ, but does not show succession of uses and is not sufficiently intensive to explain the various features of the use pattern.

(b) Data on location of dwellings, farm boundaries, forest tracts, etc., sometimes obtainable from officials at county seats or even from existing maps.

(c) Mapping the use pattern in the field.

B. Explaining the existing use pattern. An understanding of how and why existing uses have developed and continued is a very important step in determining whether changes in land use are desirable. Such an understanding may be achieved by

(1) Studying the relationship between natural conditions and the use pattern.

(2) Considering the historical development and tendencies of the land use pattern in the area and the social pattern and development in so far as they serve to explain the use pattern.

(3) Taking into account the special conditions with respect to transportation and market outlets for the area as a whole and different parts of the area.

(4) Considering existing conditions with respect to land tenure, taxation, and credit, and their influence in determining existing types of use.

(5) Analyzing the comparative advantage of the area in relation to competing areas.

(6) Mapping various indicia of the failure of different types of use, such as farm abandonment, tax delinquency, mortgage foreclosure, etc. and noting their relation to natural and economic conditions that influence the use pattern.

(7) Studying the internal economy of the business units which are responsible for the use pattern (farms, stock ranches, forest holdings, etc.), with a view both of measuring the results of different types of use and of determining how far the showing made is attributable to defects of advantages in business organization and use practice.

C. Appraising the existing use pattern and determining what changes should occur in the major uses of land. This is the final step in land use classification. It is desirable to distinguish between the ideal changes in land use toward which a program should be directed and the changes that are feasible immediately or in the near future, for the realization of the ideal program may be obstructed by the existing ownership, the tax system, the existing distribution of population, and many other conditions that can be only gradually modified.

The description of the natural conditions in the area, the determination of its physical adaptability to various possible uses, and the description and explanation of the existing use pattern will provide most of the basis for appraising existing uses and determining what changes should be made in them. (This is somewhat less true where an area is being considered for an entirely new use, for instance, the introduction of farming in an area hitherto nonagricultural.) In addition, attention should be given to some or all of the following:

(1) Breaking the area into those geographic divisions each of which appears to require a distinctive pattern.

(2) Tentatively deciding on certain crops (or other modes of use) as hypothetically desirable, for purposes of special study. These may include some or all of the uses already prevailing in the area.

(3) Considering facts with regard to physical adaptability of the various hypothetically desirable uses to particular natural type areas.

(4) Analysis of input and output data for tentatively selected uses, either as shown by past experience in the area or for areas of similar natural and economic conditions.

(5) Setting up certain trial concepts as to type of production units that will be adapted to the area. Usually this will be based on the experience of the area or of similar areas, and may grow out of the experience of special cases of successful organization and management in this or similar areas, in regard to such elements as, size of holding, combination of crops and livestock (in case of farming), forms of tenure, etc.

(6) Considering the changes in form of tenure, taxation, and credit arrangements requiste to facilitate the type of land use that appears desirable.

(7) Determining the procedure and costs of putting the land into condition for the type of use under consideration (where irrigation, drainage, clearing, and other types of construction would be necessary).

6. Determining the modifications in the institutional and fiscal set-up of an area that are or should be associated with changes in the land use pattern. - This is frequently so closely associated with the objectives and procedures of the preceding group as to require intimate coordination. Changes in the use pattern may be proposed primarily as a means of bringing about certain desirable changes in the institutional and fiscal set-up, for instance, economies in local government; or the latter changes may be either incidental to the changes in land use or made with a view to facilitating modifications in land use, for instance, effecting changes in taxation in order to encourage the use of land for forests.

Beyond the procedure for determining the optimum use of land outlined above, there will be required a mapping of the local institutions, such as schools, roads, telephone and electric lines, etc.; possibly some consideration of their present and potential service, for instance, school attendance or traffic censuses; study of the relationship of the distribution of institutions to the present land use pattern and proposed changes therein; and a consideration of desirable changes in the institutional and fiscal pattern that should be associated with proposed changes in land use.

7. Outlining the public policies necessary to promote the changes in ownership and other conditions of use and in character of use, and the various institutional and fiscal adjustments indicated by the research program. - While in general this step is a derivative from previous steps, it may involve some additional research in comparative legislation, constitutional limitations, administrative procedure, etc.

VIII. Considerations Determining Character of the Program and the Form of Projects in Land Utilization Research

The above outline contemplates a long-time and continuing program of research. The areas to be covered are so extensive and the essential economic conditions so changeable that continuity in the research attack is important.

In planning a program of research in land utilization, it is necessary to recall the general objective of such research, namely to determining how specific types of land should be employed and the necessary steps and associated adjustments requisite in bringing about such uses as may be determined advisable.

The actual research problem may present itself in a number of forms. For instance:

1. An area may already be employed for a particular use, such as farming, and the immediate problem is to determine whether that use should continue or whether a change should be made to another use.

2. The problem may take the form of determining the advisability of some proposed use for land hitherto not used at all or used for an entirely different purpose, as for instance, the advisability of agricultural settlement or of acquiring a particular area for a State park or a public forest. The procedure may also differ in accordance with whether or not the proposed use involves the question of the feasibility of a program of reclamation.

3. The existing major use of the land may be accepted as desirable, but the problem is to determine what internal modifications or adjustments in size of holding, form of tenure, or internal organization are necessary to enable that major use to continue or to continue on a more prosperous basis.

4. The major use of the land may be either obvious or already determined, and the essential objective may be a more harmonious fiscal and institutional adjustment to the existing types of uses.

While the economic classification of the land, - that is, determining the optimum use of the various types of land under existing and prospective economic conditions, is the essential procedure in land use research, this may be undertaken with one or more of a number of the associated objectives, already mentioned, such as obtaining a general idea of the extent of the resources available for various uses, determining areas to be publicly acquired, what should be done with tax delinquent lands, how to improve the relationship of taxation to land use and the ability of land to support the tax burden, modifying the fiscal and institutional set-up

in the interest of efficiency and economy, discouraging unwise land settlement and reclamation projects, promoting more favorable conditions of tenure and encouraging more effective types of private utilization.

The character of the objectives or combination of objectives will influence notably the type of research program and projects applicable to a particular area, including method of approach and degree of intensity in the various steps in land classification. For instance, when the objective is merely to determine how much land is available for various uses, it may be possible to make rough approximations for large areas such as the United States as a whole or for an entire State by extensive methods of work, utilizing such data on natural conditions and such statistics of land utilization as are available, filling in the gaps by estimates. This is useful in giving an idea of the approximate magnitudes, making possible a more intelligent formulation of policies. Where a program of land use for specific areas is called for, the requisite data on land use must be very much more complete, the methods of investigation more intensive, and the area covered correspondingly small.

At times these various types of problems may all be associated in a single geographic unit of research.

An initial and important step in each State is a delimitation of the field of research in land utilization topically and geographically. It is desirable to outline the geographic areas having land use problems of special types so that the general research programs of various divisions may be directed to the need of supplying gaps in the information available for such problem areas. This preliminary orientation may usually be accomplished by assembling, mapping, and analyzing readily available data relative to natural and economic conditions. The research work may frequently be aimed at establishing the need for or the validity of one or more lines of action tentatively considered as applicable to certain conditions. The tentative selection of lines of action or policies, however, may itself require some preliminary research.

Actual projects, as that term is commonly applied to the specific undertakings ordinarily made the basis of a cooperative agreement between Federal and State agencies, may consist of one or more of the steps in the task of determining the optimum use of land, such as, for instance, making a physical inventory of one or more natural conditions of land use, determining physical adaptability of a natural land type for some purpose, or some of the various economic steps outlined above for mapping and explaining existing land uses, appraising existing uses, determining optimum uses, and analyzing the relation of fiscal and institutional conditions to land use. These segments or steps, however, should be undertaken as recognized parts of the larger project of economic land classification and of a general program of research in the field of land utilization.

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